



*Working with companies to solve
tough problems for 100+ years*

Student Handbook

Read what 6-A Alumni have to say about their 6-A Experience



"My 6A experience with Cadence Design Systems was both fulfilling and applicable to the real world of PCB, package and chip synthesis. I was mentored and taught by knowledgeable engineers who understood the connection between research and industry, and who cultivated an open environment where sharing ideas was paramount. I've felt like a real part of the team with the autonomy to pioneer my own visions and make critical decisions that would affect the end product. Now, I've become a full-time member of Cadence and have been trusted to both manage and mentor a younger class of MIT 6A students. Not only has the program allowed me to become a more effective engineer, but a more effective communicator and manager. I see 6A being an invaluable asset in building the teams that will become the future of Cadence and industry partners alike."

Zachary Zumbo, Lead Software Engineer
Cadence, Chelmsford, MA
6-A M.Eng. Graduate, February 2020



"Through the 6-A program I was able to gather nearly a year's worth of full-time experience working directly on difficult, state of the art technical challenges alongside some of the most talented engineers in my field all while earning my Master's. As a 6-A student at Linear Technology (now Analog Devices), I worked closely with my mentor to research the latest developments in the industry and identify significant problems remaining to be solved. When I came up with a potential solution of my own to one of these problems and pitched it to my mentor, he was incredibly supportive. He, along with the rest of the engineering team I was on, helped me flesh out the idea and gave me the resources I needed to pursue it further eventually resulting in my first patent and silicon test chip. I can't overstate the value of such an opportunity to put all of my education into practice and see something real come out of it. This experience enabled me to uniquely stand out in my later job search and is a major reason why companies continue to seek out alumni of the 6-A program at MIT.

Alex Sloboda, SAR Design Engineer
Analog Devices, Wilmington, MA
6-A M.Eng. Graduate, June 2018

Preface

This publication is the 54th revised annual edition of the Student Handbook and the 105th year of the 6-A Internship Program founded in 1917. Our goal is to provide answers to applicants most frequently raised questions about 6-A and its participating companies. Additional information can be found on the 6-A website. .

If you have any questions throughout the admission process, or the 6-A internship, please feel free to contact the 6-A Director, Professor Tomás Palacios (tpalacios@mit.edu), or Student/Industry Engagement Coordinator, Priscilla Capistrano (priscill@mit.edu)

Introduction

MIT's Department of Electrical Engineering and Computer Science (EECS) 6-A M.Eng. Thesis Program matches Course 6 undergraduate students in the Department with industry internships and mentors. The 6-A Program is an excellent choice for Course 6 undergraduate students interested in obtaining both a Bachelor (S.B.) and Master of Engineering (M.Eng.) degree with a significant industry component.

This unique opportunity gives students who have demonstrated excellent academic preparation and motivation a chance to relate the scientific and engineering principles, which they learn in the classroom, to current engineering problems in industry, while obtaining a funded M.Eng. thesis for the M.Eng. year.

Although the main focus of the 6-A program is to help students develop an M.Eng. thesis while working in industry, the program has recently expanded to also help undergraduate students complete three- and six-month internships in industry without the need to pursue an M.Eng. thesis.

The 6-A Internship Admission Process

What is the 6-A Program?

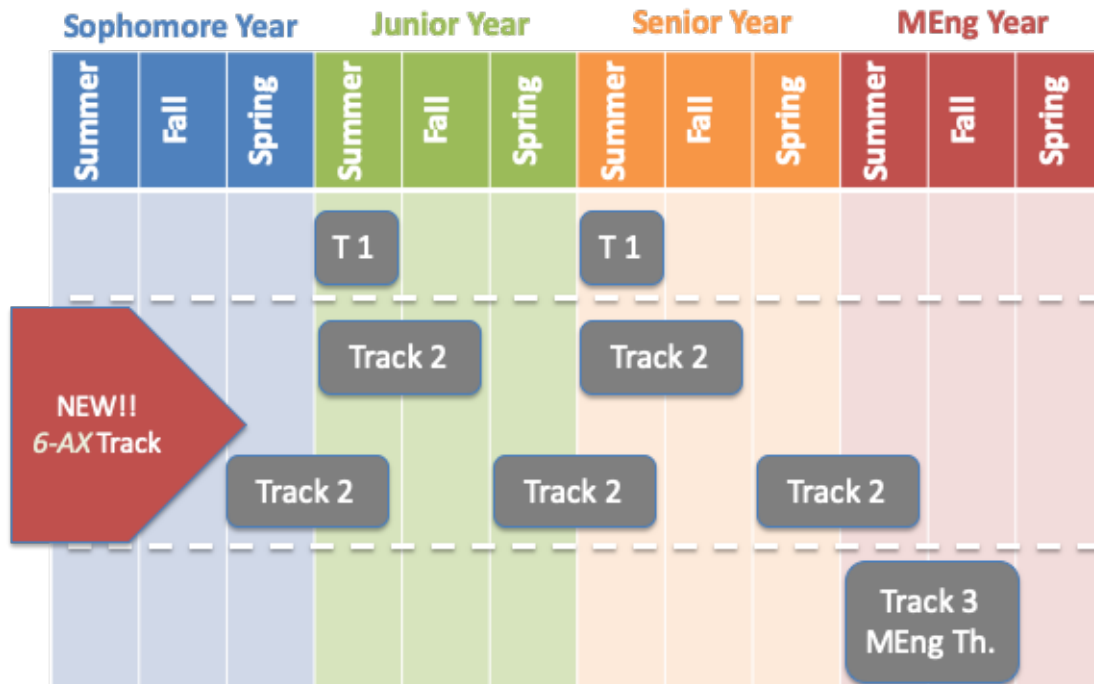
The 6-A Program helps MIT EECS students to do impactful full-time internships in industry and government labs. Many of the students in the 6-A program are interested in pursuing their M.Eng. degree, and the program allows them to use the work done at the company during the M.Eng. year towards their M.Eng. thesis. More than 2,500 Course 6 students have gone through the program over the years, including Amar Bose (founder of Bose Corporation), Cecil Green (founder of Texas Instruments), Andrew Viterbi (founder of Qualcomm), Ray Stata (founder of Analog Devices), Thuan Pham (Uber CTO), Lisa Su (AMD CEO), and many others.

The 6-A program currently has three different tracks to provide maximum flexibility to students:

Track #1 helps undergraduate students to do three-month full-time internships in industry and government labs.

Track #2, also known as 6-AX, is new and provides full-time 6-to-8-month internships to undergraduate students.

Track #3 is ideal for students who are now seniors, as it focuses on the M.Eng. year. In this track, the student does a six-month internship at the 6-A company during which the student works on his or her M.Eng. Thesis.



Who Can Apply?

Course 6 sophomores, juniors, or seniors in good standing may apply to the 6-A Internship Program. Senior students must be committed to the completion of the work assignments and of the M.Eng. degree with an industry-based thesis.

Open House

The EECS Department is hosting a Student Open House Meeting on **September 20, 2022**, in the **Grier Room (34-401)** at 5 pm. This meeting is a great opportunity for students to learn more about the 6-A Program and member companies, prior to the 6-A application deadline on September 30, 2022.

The Application Process

Anyone interested in joining 6-A must file:

- Formal application
- Updated resume
- Grade report
- Letter of recommendation (*recommended, but optional*)

Deadline is **September 30, 2022** for the Fall recruitment. The application should be submitted through the 6-A website. This site will open in late September. See Appendix D for the 6-A Calendar of Events.

As part of the application process, the student is highly encouraged to submit a letter of recommendation. It is best to request the letter from faculty or others who know you and your work well (*e.g.*, UROP, SuperUROP, project, or summer job supervisor; preferably not from a peer). Keep in mind this letter, as well as your CV and other application material, will be used by the member companies when choosing which students, they want to interview for the program.

There are many resources to help you polish your application material. For example, many students have found the EECS Communications Lab (<https://mitcommlab.mit.edu/eecs/>) really useful. Make sure the application material is as strong as possible and highlights why the companies should hire you!

The Selection Process

The applications will be shared with all the 6-A member companies for review. As part of the 6-A online application, students should indicate which research/internship topics they are interested in. Please select as many topics as you are potentially interested in, as those topics will be used by the 6A companies to filter the applicants they are interested in interviewing. The 6-A office will try its best to make sure you interview with all the companies that are interested in the research/internship topics that you selected; however, in some cases, that may be not possible due to limited interview slots per company. In such cases, we will follow the guidelines that 6-A companies give us regarding their interview preferences.

Companies have until November 14, 2022, to submit a ranked list of students selected for consideration. After this date, the 6-A program then matches company lists with student lists to make placements maximizing student and company preferences. This is done in the same way that medical students are matched to medical schools, and it uses a very cool algorithm worth the 2012 Nobel Prize in Economic Sciences called the Roth-Peranson algorithm (<https://www.aeaweb.org/articles/pdf/doi/10.1257/aer.89.4.748>).

IMPORTANT - In many cases, students who spend 3 or 6 months at the company as undergraduate students (Track 1 or 2) can continue in the same company during their M.Eng. year (Track 3); however, you should double-check this with the company in advance. In the same way, it is possible to do Track 1 or 2 with a company, and do Track 3 with a different company.

*For students in Track 3 (i.e., those interested in pursuing an M.Eng. Thesis at the company), **their 6-A internship and admission into the 6-A program is contingent on the student being admitted into the EECS M.Eng. Program.** The 6-A Office does not manage the EECS M.Eng. admission process, which depends on the EECS Undergraduate Office. Please send an email to ug@eecs.mit.edu if you have questions regarding your eligibility for the EECS M.Eng. Program.*

The 6-A internships and admission into the 6-A program are contingent on the student obtaining the work visa needed by international students doing internships in the US, or by MIT students doing internships abroad. Some companies (e.g., Lincoln Laboratory) may also require the student to get security clearance.

Frequently Asked Questions

The intent of the 6-A program is to guide students who wish to have industry experience with technology leaders through the M.Eng. thesis at MIT. Your company mentor and everyone at the MIT 6-A office wants you to succeed, so if you have any questions or concerns at any time, please do not hesitate to ask us directly. For your convenience, however, answers to some frequently asked questions follow.

Q. Do I keep my regular faculty counselor/academic advisor?

- A. Yes, when a student joins the 6-A Program, they keep the faculty counselor assigned to them when they joined Course 6. Your faculty counselor continues to handle registration matters and should be consulted for education advice.

Q. What are the responsibilities of a 6-A company?

- A. It is the obligation of the 6-A partner company to assist you in achieving your educational and work experience goals through the following:
- Assign exciting projects using state-of-the-art technology.

- Assign a company mentor to supervise your 6-A work assignments.
- Pay competitive salaries, equivalent to or better than a research assistantship on campus.
- Communicate with your MIT Thesis Advisor.
- Assess and evaluate your progress.
- In the case of 6-A Core Partners (for the definition of 6-A Core Partners, please see below), provide a 6-A fellowship or research assistantship to *partially* fund the student's tuition during the spring term of the M.Eng. year if the student was not able to secure a teaching assistantship that term.

Q. How can I fit all my classes into my class schedule?

- A. Because a 6-A student in the M.Eng. Program has one less term on campus, some planning is necessary so that all requirements can be met on time. Some general notes appear below:

By registering for 6.9850^[6.921] in the summer of Track 1 and 2, 6.9860^[6.922] during the Spring or Fall of Track 2, and 6.9870^[6.951] during the first summer of Track 3, you obtain up to three unrestricted electives for a total of 36 (UG) units. By registering for 6.9880^[6.952] during the graduate 6-A assignment in the fall term, you pick up an additional 12 (G) units of the 66 units required for M.Eng.

6-A students also register for a total of 24 thesis units (6.ThM) (during the graduate Summer and Fall assignments) to complete the M.Eng. thesis. If the thesis is not submitted by the beginning of the Spring Term, students register for another 12 thesis units. M.Eng. students **MUST** register for 6.ThM each term until their thesis is completed.

Plan your M.Eng. program so that during your last term on campus you need a maximum of two classroom subjects to meet your M.Eng. degree requirements. Then you can be a teaching assistant, if selected, during your last term, both for its educational value and to obtain full teaching assistantship funding including full term tuition, a stipend, and paid medical insurance. If you are a TA or RA, a maximum of 27 classroom subject units (two classes) are allowed.

Every M.Eng. program must include four subjects (42 units) of Approved Advanced Graduate Subjects (AAGS) as well as two M.Eng. Restricted Electives. Do not leave this for the last term as the workload will be too large, especially if you are also trying to finish your thesis. Take AAGS classes and/or M.Eng. Restricted Electives during your senior year. You can use 6.9850^[6.921], 6.9860^[6.922], and 6.9870^[6.951] credits towards your undergraduate units, and then use the AAGS classes for the M.Eng. requirements.

Q. How am I graded?

- A. Students are **required** to submit a mid-term and final report for each term on each work assignment. We will send you an email when those reports are due. You will receive an "Incomplete" if you do not return complete reports on time. Additionally, we require company mentors to complete an "Employer's Evaluation Report" at

the conclusion of each assignment. All of these reports enter into the granting of academic credit for 6-A work assignments. If you meet all the reporting requirements and have performed satisfactory work at your 6-A company, you will receive a "P" grade in your 6-A registration (9.9850^[6.921], 6.9860^[6.922], 6.9870^[6.951], or 6.9880^[6.952]).

Q. Do I have to do the six-month M.Eng. internship in the summer/fall?

- A. 6-A students admitted to the M.Eng. Program may, by mutual arrangement with their company, select either a Spring/Summer or Summer/Fall schedule for their six-month internship. Some students prefer to remain at MIT during the spring in order to take graduate subjects, which will aid them with the work they will be doing on their graduate assignments. Others find that due to the sequencing of related subjects on a fall-spring basis, they need to select the Spring/Summer schedule in order to remain at MIT during a Fall Term of graduate study.

The purpose behind an uninterrupted six-month internship is to provide the student with sufficient time to do an in-depth piece of engineering work at the company which will be acceptable to the Department's Faculty as the basis for the M.Eng. Thesis. For special circumstances, with the agreement of their 6-A Company, 6-A students can request from the 6-A Program Office a different graduate internship schedule.

Q. As an Intern, will I be paid?

- A. Yes, you will receive a competitive salary during your work assignments. However, we believe salary should not be the main determinant in the selection of a particular company. Also, keep in mind that depending on whether the company is a Core member or an Affiliate member of the program, your MIT tuition may or may not be covered by the company.

6-A student salaries are established by the individual companies and are not necessarily uniform amongst all 6-A companies. Salary information is available from the individual company only, not from the 6-A office.

Q. Will my salary ever increase?

- A. Yes, you will generally receive an increase in salary for each successive internship. By the time you complete your senior year, you will have completed the academic work for your S.B. degree, and a company normally increases salaries during the 6-A M.Eng. year.

Q. Will I receive company benefits, like insurance?

- A. 6-A students are generally considered temporary employees and are not eligible for company benefits such as medical insurance. However, some 6-A companies offer a housing subsidy, and partial support for local travel such as shuttle buses, and will usually pay roundtrip transportation from MIT to the company. Please discuss this directly with the 6-A company.

Q. Am I guaranteed admission into the M.Eng. program?

- A. **No.** While it is the intent of the 6-A Program to guide you through the M.Eng. degree at MIT, *participation in 6-A is contingent on admission to M.Eng.* Read more about M.Eng. admission and degree requirements here: <https://www.eecs.mit.edu/academics-admissions/undergraduate-programs/6-p-meng-program/requirements-admissions>

M.Eng. applications are open from drop date through the end of term each fall and spring. Decisions are released in January and June, respectively. You are strongly advised to apply for M.Eng. as soon as you meet the requirements (generally from sophomore through senior year). You may apply more than once if you are not admitted on the first attempt provided there is another application cycle before you graduate with your SB.

Q. What is a good project for my M.Eng. Thesis?

- A. The M.Eng. Thesis should be the result of a reasonably comprehensive six-month effort where the student shows considerable initiative, creative thought, and a good deal of individual responsibility. The thesis may be a design project, an analytical paper, or experimental work of a technical nature.

Examples of previous 6-A thesis projects can be found here:

<http://6a.mit.edu/faqs/sample-theses>

More information on the logistics can be found here:

<http://www.eecs.mit.edu/academics-admissions/undergraduate-programs/6-p-meng-program/thesis-guide>

Q. Who supervises my thesis?

- A. A 6-A student, although doing an M.Eng. Thesis while at the company, requires an MIT faculty member as an M.Eng. Thesis Advisor just like any other EECS student. The 6-A Director may also assume this added responsibility for some of the students.

Because the Institute values the time spent by company thesis supervisors in the work which eventually becomes a student's thesis, the company thesis supervisor is also asked to sign the thesis title page as an acknowledgment of their contribution to this work.

Q. What is the M.Eng. Thesis Proposal?

- A. A Graduate Student in Track 3 of the 6-A program typically submits their thesis proposal at the end of their first graduate term. All thesis related information can be found in the M.Eng. Thesis Guide (<http://www.eecs.mit.edu/ug/thesis-guide.html>). The EECS Thesis Guide is a valuable tool that will take you step by step through your M.Eng. year.

Q. I am ready to submit my M.Eng. Thesis, is there anything else I should do?

- A. At the time of submission, the completed Thesis must be accompanied by a "Thesis Release Letter" from the 6-A company (<http://www.eecs.mit.edu/node/5434>) stating that the thesis is

within the scope of the thesis proposal as previously approved; does not contain any material that is objectionable to the company; recognizes that the actual thesis document will be the permanent property of MIT; and will be placed in the MIT Library. The student or MIT owns the copyright to the thesis, but the 6-A company has permission to reproduce and distribute copies of 6-A Theses done at the 6-A company in whole or in part, and to grant others the right to do so. The thesis is signed by both the MIT and 6-A company thesis advisors.

DUE TO TIME CONSTRAINTS OF BOTH YOUR MIT AND 6-A COMPANY THESIS ADVISORS, IT IS IMPORTANT THAT YOU GIVE THE 6-A COMPANY ADEQUATE TIME (I.E., AT LEAST 45 DAYS BEFORE THE M.ENG. SUBMISSION DEADLINE, ALTHOUGH YOU SHOULD CHECK WITH THE COMPANY AT THE BEGINNING OF THE WORK ASSIGNMENT TO SEE IF THEY WOULD NEED MORE TIME) TO REVIEW AND COMMENT ON YOUR THESIS BEFORE THEY SIGN YOUR THESIS. YOU WON'T BE ABLE TO GRADUATE WITHOUT THEIR APPROVAL!

In many circumstances, thesis work may offer potentially attractive business opportunities to the graduate student and/or the 6-A company. A thesis hold allows the student to delay public access to research findings in order to pursue patent applications or explore other business opportunities associated with the work. A request for a thesis hold must be made jointly by the student and advisor and directly to the Office of the Vice Chancellor via the request form:

https://oge.mit.edu/wp-content/uploads/2018/01/Thesis-Hold-Request-Form_2017_10.pdf

The Vice Chancellor acts with power in approving thesis holds and requesting that the MIT Archives hold a thesis from public access for up to three months without delaying the student's graduation.

Q. 6-A Core Partners vs 6-A Affiliates. What is the difference?

- A. A company can be a member of the 6-A program either as a 6-A Core Partner or as a 6-A Affiliate. From a student perspective, there are two important differences between Core Partners and Affiliates. First, students doing their internship at a Core Partner will typically receive a 6-A Fellowship through MIT during the fall term of their six-month internship. This Fellowship pays the student's salary, MIT tuition, and health insurance during the fall term (see the questions below for more information on what a 6-A Fellowship is). On the other hand, Affiliate companies do not offer a 6-A Fellowship but they pay the students directly during the fall term. **In this case, students interning at Affiliate Companies are responsible for paying the MIT tuition and health insurance expenses directly.** To make sure students interning at a 6-A Affiliate company receive the same level of benefits as the ones at a Core Partner company, the 6-A office asks 6-A Affiliate companies to set a minimum salary for their 6-A interns of \$1,650 in 2022, which is typically higher than what the students who are doing internships in 6-A core companies receive, in order for them to pay these additional expenses. Please note that some non-profit organizations and government labs are not able to meet these salary guidelines. When in doubt, always ask the company in advance!

The second important difference between interning at a 6-A Core Partner and a 6-A Affiliate is that 6-A Core Partners will partially cover (through the remaining monies in their Fellowship account, approximately \$16,253 for the 2022-2023 academic year) the tuition of the student during the spring term of his or her M.Eng. degree, if the student has not been able to secure a Teaching Assistantship that term. **Students interning at 6-A Affiliate companies do not have this guaranteed support due to the reduced membership fees paid by 6-A Affiliate companies.**

Q. How do I know if a company is a Core Partner or an Affiliate to 6-A?

- A. Check the website for the most up-to-date information (<http://6a.mit.edu>.)

Q. What if the company I want to do my M.Eng. with is not part of the program yet?

- A. Please talk to us! We are adding new companies to the program every month and we may be able to bring them in as a 6-A Affiliate, as long as they are committed to providing an exceptional environment for the student to work on an exciting thesis project. It is typically easier to overcome the administrative hurdles of bringing a new company into the program if the student has already done an internship at the company, or he/she already knows someone there who would be interested in being the company mentor.

Q. What is the 6-A Fellowship?

- A. 6-A Core Partners offer a 6-A Fellowship to 6-A graduate students in lieu of salary after the first three months of their six-month internship. This 6-A Fellowship gives 6-A graduate students essentially the same benefits as full-time on-campus research assistants receive: one term of full tuition and one term medical insurance and stipend while interning at the company. Lincoln Laboratory offers a Research Assistantship instead of a 6-A Fellowship, but the benefits are similar.

For most 6-A graduate students, the 6-A Fellowship has more value than receiving a salary during an academic term. Please note that, typically, you receive a salary during the summer term, not a Fellowship.

If your 6-A company participates in the 6-A Fellowship Program (i.e., it is a 6-A Core Partner) and you have no other Fellowship or other financial support (e.g., your 6-A company is not planning to pay you directly after the summer term), you must send the 6-A office the following signed and dated statement by the drop-date of the academic term before the Fellowship is desired:

"I have no other fellowships support during the (year) (Summer, Fall or Spring) term and would like to receive the 6-A Fellowship in lieu of salary."

Signature

Date

Q. Do I have to pay tuition while I'm working at the 6-A company?

A. Yes and no.

International Undergraduate Students (seeking CPT):

Additional tuition is charged at a reduced rate for the required summer session registrations

Non-Lincoln Laboratory 6-A Graduate Students:

A reduced tuition is also charged during summer and regular academic year term work assignments. Non-Lincoln Laboratory 6-A Core Partners generally offer financial assistance to 6-A graduate students through the 6-A Fellowship Program, while Lincoln Laboratory generally offers regular MIT Research Assistantships.

6-A Affiliate companies pay the student directly (i.e., they are not involved in the 6-A Fellowship program) and therefore the student is responsible for paying his/her tuition and health insurance (if applicable) directly to MIT. The 6-A office asks 6-A Affiliate companies to set a minimum salary for their 6-A interns of \$1,650 in 2022, which is higher than what the students who are in the 6-A Fellowship program receive, in order for them to pay these additional expenses.

Q. What happens if I don't complete the M.Eng. Thesis on time?

A. If for some reason the 6-A student does not complete the M.Eng. thesis on time, tuition must be paid for later terms while the thesis is still being completed. If MIT enrollment has to be extended beyond the normal period, additional terms of registration will be billed at the prevailing rates for the regular term and/or Summer Session tuition.

Appendix A.

Tuition in 6-A M.Eng. Program

TO: 6-A Graduate Students working in companies that are Core Partners of the 6-A Program

FROM: Professor Tomás Palacios, 6-A Director

DATE: June 1, 2022

SUBJECT: M.Eng. Thesis Assignments, Tuition, Registration, and Graduate Financial Support

NON-LINCOLN LAB AND NON-DRAPER LAB 6-A GRADUATE STUDENTS

Tuition and Registration

There are special tuition rates for graduate students on internships if no courses are taken while on 6-A work assignment. Graduate students who are on off-campus internships are charged tuition equal to 35% of regular tuition. This charge applies during the summer as well as during the fall and spring terms, when on 6-A assignment. Thus, during the 2022 summer session, the full tuition will be \$2,480. For the 2022-2023 fall and spring terms, the full tuition will be \$28,795 per term and for the term you will be away on 6-A assignment, you will be billed \$10,080. During a graduate term on campus, you will be billed the full tuition of \$28,795. Tuition charges for summer, fall, and spring terms of your M.Eng. year will be paid by some combination of the 6-A Fellowship Program and by an EECS Teaching Assistantship during an on-campus term, generally the Spring Term of the M.Eng. year, provided that funds are available, you follow the required procedures described in this memorandum, and you are not receiving any other financial support such as a research assistantship or other scholarship.

Graduate 6-A students while on 6-A work assignments who register for MIT courses in addition to their internship registration (6.9850^[6.951], 6.9860^[6.922], and 6.ThM) typically are also charged the special student per unit rate (\$890/unit during the 2022-2023 academic year) up to the maximum term Fall or Spring tuition charge of \$28,795. That is, 35% tuition plus the \$890/unit charge cannot exceed the full tuition (\$28,795) for the term. A 12-unit course would then cost \$10,680 and any course work registration of 21 units or more will result in a full tuition charge of \$28,795 for which \$10,080 is paid by the 6-A Fellowship and summer tuition of \$2,480 and the remainder of **\$16,235** due to course units is paid by the 6-A student. **The 6-A Fellowship will not pay for any subject units so 6-A students must plan their graduate program carefully so that courses are only taken when on campus when full tuition is already charged so that there are no additional charges for courses.**

As a graduate M.Eng. thesis student, you should generally register 6.9870^[6.951] for your first M.Eng. assignment and 6.9880^[6.952] for your second. You also need to register for a total of 24 units of 6.ThM for your M.Eng. thesis work before you graduate which is usually best distributed as 12 units/term over your fall and spring terms of your graduate M.Eng. year and until your thesis has been completed.

6-A Fellowship Program (Core Companies)

The 6-A Fellowship Program for non-Lincoln Lab 6-A graduate students provides both a scholarship computed to cover full tuition and medical insurance for one term, plus a stipend for one term that is identical to those available to on-campus research/teaching assistantships and comparable to fellowship recipients. In lieu of salaries during the graduate work term at the 6-A company, typically fall term, companies who offer the 6-A Fellowship will provide funds to MIT in the amount sufficient to match research/teaching assistantships available to EECS graduate students at MIT.

For 2022-2023 the estimated cost of a 6-A Fellowship will be:

TABLE I

	Fall Term	Spring Term
1 term full tuition	\$28,795.00	\$28,795.00
½ annual medical insurance (est.)	\$1,634.50	\$1,634.50
1 term stipend	\$17,455.50	\$17,455.50
	<hr/>	<hr/>
	\$47,885.00	\$47,885.00

This 6-A Fellowship will be awarded to 6-A graduate students when on 6-A work assignment. The 6-A Fellowship is awarded for the period of one academic term which for the fall 2022 term corresponds to the dates September 1, 2022 – January 15, 2023. Students may choose to decline the 6-A Fellowship (e.g., if they already receive tuition support from other sources) and continue to receive competitive salaries instead while on work assignment at their 6-A Company.

To receive additional financial support from EECS during an M.Eng. term, typically the spring term of the M.Eng. year, while you are not on 6-A work assignment and are taking classes and/or doing M.Eng. thesis work on-campus, you must apply for an EECS Teaching Assistantship (TA) in at least 4 classes, if you only need two courses or less to graduate, and must accept it if offered. Note that a TA can at most take two courses, so it is important for you to plan your courses so that no more than two courses need to be taken to meet graduation requirements when you apply for a TA. If you are in your last term and need more than two courses to graduate, **the maximum amount of 6-A support will be any remaining funds in your 6-A Fellowship, typically around \$16,235.** 6-A M.Eng. students are encouraged to do a TA because of the great value of such teaching experience to their educational and professional development. In addition, a TA provides full tuition and medical insurance plus a \$15,277.50 taxable stipend, in total worth about \$40,000.00 in 2022-23 as given in Table I above. **To maximize your chances of getting a TA, it is very important to contact the faculty members who will be teaching the classes you would like to TA for by the end of September 2022.** These professors will be the ones selecting the TAs for their classes, and it is always useful if you have introduced yourself to them in advance.

If you need more than two courses to complete your M.Eng. program, do not apply for a TA if you want to finish your M.Eng. program on time. If you decline an offered TA, the most you can receive is a partial tuition payment from 6-A of any remaining monies in your 6-A Fellowship funded by your 6-A company, typically about \$16,235. If you apply for a TA in at least 4 classes and have two courses or less required to complete your M.Eng. program but do not receive a TA appointment, please contact the 6-A office by January 1st, as we may be able to help. If you need three or more courses to graduate and still want to be a TA, you must complete the remaining courses in future terms. Remaining M.Eng. requirements can be taken in future terms but with no 6-A financial support, although RA and TA support is allowed.

LINCOLN LABORATORY 6-A GRADUATE STUDENTS

Lincoln Laboratory 6-A Graduate Students should generally not register during a summer assignment and should register for 6.9910_[6.991] as a research assistant (RA) and 12 thesis units during fall and spring terms. This way you will receive a competitive salary during the summer and a RA during fall and spring terms.

If you have any further questions about any aspect of the 6-A Program, please contact the 6-A Director, Professor Tomás Palacios, at tpalacios@mit.edu.

Appendix B. Calendar of Events 2022 6-A Fall Recruitment

September 20, 2022

6-A Student Open House
Meeting
5PM Grier Room
34-401

September 22, 2022

EECS Alliance/6A Career Fair
Building E15 Lower Atrium
5-7PM

September 30, 2022

6-A On-Line Applications Due
4PM

September 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

October 26 and 27, 2022

6-A Company Interviews
October 26 – 9:00-5pm,
Grier Room 34-401 or Remote

October 27 – 9am-5pm
Grier Room 34-401 or Remote

October 27 – 1PM EST
6-A Business Meeting for
All Company Representatives
via Zoom

October 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

November 14, 2022
Company Student Selection
Lists Due

November 18, 2022
Company Student Selection
Lists Available

November 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

December 1, 2022
Students Ranking Due

December 5, 2022
Matching Lists Available

December 9, 2022
Students Sign 6-A Agreement

December 15, 2022
Last Day for Current 6-A
Undergraduate students to
Withdraw From
6-A Program

December 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

May 12, 2023
M.Eng. Theses Due

May 2023						
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	19	19	20
21	22	23	24	25	26	27
28	29	30	31			

June 1, 2023
MIT Commencement

CONGRATULATIONS
6-A GRADUATES!

June 12-August 25, 2023
Summer Work Period

Sept. 5-Dec. 15, 2023
Fall Work Period

June 2023						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Appendix C. Interviewing Tips

Advance knowledge about a company's business impresses an interviewer and avoids need to repeat information that is already available in the brochure. It is important that as much of the interview period as possible be devoted to a discussion of your qualifications and professional interests. Keep in mind that you only have thirty minutes to convince the interviewer that you should be selected. You can learn more about the 6-A program and the companies by viewing the 6-A website at <http://6a.mit.edu/>

The 6-A companies' own websites are linked from the Participating Companies page:

<http://6a.mit.edu/industrial-partners>

For more tips on interviewing, visit the MIT Career Advising & Professional Development website at:

<https://capd.mit.edu/>

The EECS Communications Lab is also a great resource that you should explore:

<http://mitcommlab.mit.edu/eecs/>

APPENDIX D.

EECS Communications Lab



EECS Communication Lab

Writing, Speaking & Visual Design

1:1 peer coaching for engineers – by engineers

What can you get help with?

- Thesis proposals
- Theses
- Grad school applications
- Fellowship applications
- Resumés & CVs
- Coursework
- Posters
- Journal and conference papers
- Talks and presentations
- Abstracts
- Figures
- Elevator pitches
- **ANY technical communication task**

Why use the Communication Lab?

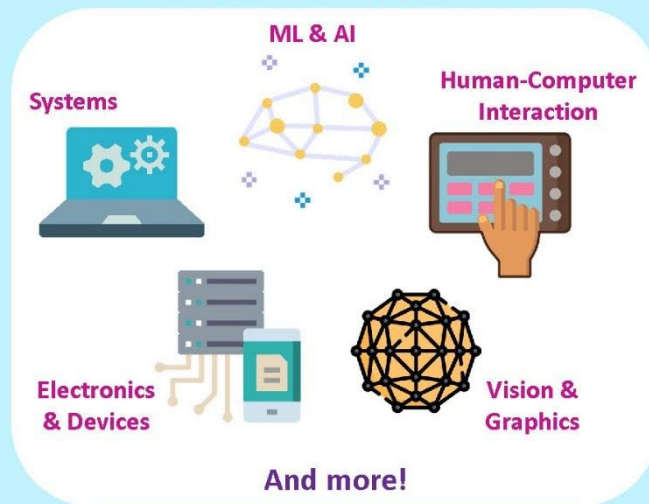
It's here to help you.

The Comm Lab provides free **one-on-one coaching** for whatever technical communication task you might be working on. Whether you are preparing a fellowship application, working on a paper for a class, giving a talk at group meeting, or designing a poster, the Comm Lab is here to help.

We also offer **just-in-time workshops and events** about specific communication tasks, so you can learn skills exactly when you need them.

Check out our **online resources** about technical communication any time.

Our coaches have expertise in...



The secret to our success:

Our staff are EECS grad students and postdocs with communication training, making the Comm Lab uniquely able to provide technical communication coaching.

Find more info and make an appointment: mitcommlab.mit.edu/eeecs

Questions or ideas: eeecommlab@mit.edu



Appendix E.

Special Advantages for International Students

International students attending MIT are eligible to apply to the 6-A Internship Program. However, they should be aware of special conditions imposed by the U.S. Citizenship and Immigration Services (USCIS) and by the employment policies of the companies participating in the Program.

Because 6-A is a regular educational program, work assignments under Curricular Practical Training (<https://iso.mit.edu/f-1-curricular-practical-training/>) do not count against Optional Practical Training time.

Some of these conditions are described below; specific information can be obtained by contacting the MIT International Students Office (ISO), or by visiting the ISO web site at <http://iso.mit.edu/>

6-A and Curricular Practical Training

Because the 6-A Program gives academic credit for work performed at the participating companies, International Students with valid VISA status may be eligible for the 6-A Internship Program. Once selected into the 6-A Program, authorization to work for a participating 6-A company is not automatic – students must apply for it through the International Student Advisor. International Students should consult with one of the International Student Advisors in the International Students Office as soon as you are accepted into the 6-A Program.

6-A Company Policies

The companies participating in the 6-A Program determine their own hiring policies regarding International Students. Many, but not all, of these participating companies have restrictions (security clearance, green cards, etc.) which limit the hiring of International Students. Consequently, competition amongst those fewer companies that do have openings for such students becomes exceptionally keen.

Admission to 6-A

Upon an International Student's acceptance by a company to the 6-A Program, the EECS Department will notify MIT's International Students Office (ISO). It becomes the responsibility of the student to make an appointment with the ISO and to apply for Curricular Practical Training by filling out the required forms. This process must be repeated for each subsequent employment period (i.e., 6-A Work Assignment). Students who start working without authorization lose their legal status in the United States.

If you have any questions, the 6-A Office and Aurora Brule (abrule@mit.edu) in the International Students Office will gladly assist you in any way they can.

Appendix F.

Nondiscrimination Policy

The Massachusetts Institute of Technology is committed to the principle of equal opportunity in education and employment. The Institute prohibits discrimination against individuals on the basis of race, color, sex, sexual orientation, gender identity, pregnancy, religion, disability, age, genetic information, veteran status, or national or ethnic origin in the administration of its educational policies, admissions policies, employment policies, scholarship and loan programs, and other Institute administered programs and activities; the Institute may, however, favor US citizens or residents in admissions and financial aid.*

The Vice President for Human Resources is designated as the Institute's Equal Opportunity Officer. Inquiries concerning the Institute's policies, compliance with applicable laws, statutes, and regulations, and complaints may be directed to Ramona Allen, Vice President for Human Resources, Building NE49-5000, 617-324-5675. In addition, inquiries about Title IX (which prohibits discrimination on the basis of sex) may be directed to the Institute's Title IX Coordinator, Sarah Rankin, Room W31-223, 617-324-7526, titleIX@mit.edu. Information about the grievance procedures and process for discrimination and discriminatory harassment, including how to report or file a complaint of sex discrimination, how to report or file a formal complaint of sexual harassment, and how MIT will respond is available at idhr.mit.edu. Inquiries about the laws and about compliance may also be directed to the United States Department of Education, Office for Civil Rights, Region I, 5 Post Office Square, 8th Floor, Boston, MA 02109-3921, 617-289-0111, OCR.Boston@ed.gov.

**The ROTC programs at MIT are operated under Department of Defense (DoD) policies and regulations, and do not comply fully with MIT's policy of nondiscrimination with regard to gender identity. MIT continues to advocate for a change in DoD policies and regulations concerning gender identity and is committed to providing alternative financial assistance under a needs-based assessment to any MIT student who loses ROTC financial aid because of these DoD policies and regulations.*

This statement was last updated on February 11, 2021.

Appendix G.

6-A Core Partner Companies

For the most up-to-date information on the 6-A Core Partner Companies,
and for the list of Affiliate Companies, check the 6-A website:

<http://6a.mit.edu>



Join Analog Devices' Design Gurus

To Solve the Toughest Problems

Internships at Analog Devices For MIT VI-A Students

Analog Devices, Inc. (ADI) is a world-leading semiconductor company specializing in high performance analog, mixed-signal, and digital signal processing integrated circuits (ICs). ADI's products play a fundamental role in converting real-world phenomena such as temperature, motion, pressure, light, and sound into electrical signals to be used in a wide array of applications. Examples of current applications include high performance audio and video, wireless and wireline communications, industrial controls and factory automation, automotive entertainment and safety systems, and medical and diagnostic instrumentation.

In 2021, Maxim Integrated became part of Analog Devices. With the power of the combined product portfolios, customer bases, world-class engineering, manufacturing, and sales and support teams, Analog Devices is now the premier, global, high performance industry leader across all major analog segments. The combination of the two analog-leading companies will produce unprecedented possibilities for innovation and growth. The combined company completed fiscal year 2021 with over \$10 billion in sales and a worldwide workforce of approximately 25,000 employees. Our products are now ubiquitous in the most demanding electronic circuits. Prominent examples are smartphones, drones, autonomous vehicles, and surgical robots. Join the team that's ahead of what possible.

"Through the VI-A program, I found an academic home away from MIT at Analog Devices. ADI gave me the opportunity to work on a cutting-edge topic, taking circuit design skills I gained in 6.012, 6.301, and 6.775 and applying them toward a larger project. It is a great work environment with many MIT alumni and very supportive mentors."

—Alec Poitzsch, VI-A Alumnus (2014)

"ADI's technology tackles a huge and diverse set of problems — as a 6A intern I was fortunate to gain exposure to exciting company initiatives at the cutting edge of all aspects of hardware and software, ultimately focusing on two projects which were great fits for my interests and skills. In addition to the interesting and challenging work, I got to collaborate with and learn from a group of extremely smart, dedicated, and supportive coworkers. I enjoyed my experience so much that I decided to return for full-time!"

—Cece Chu, VI-A Alumnus (2021)



VISIT [ANALOG.COM](https://www.analog.com)



AHEAD OF WHAT'S POSSIBLE™

Why Choose Analog Devices?

The internship experience enhances students' ability to identify and grasp important concepts integral to analog and mixed-signal integrated circuit design when students return to classes at MIT. Because most of our products are designed by individual engineers, you won't get lost as a small part of a huge project team. Over the last five years, Analog Devices hired more new college graduates from MIT than from any other school. Many started their careers with Analog Devices as an intern.

VI-A Assignments

Student assignments are determined by matching the student's interests with our program needs. Positions are available in ADI's Analog/Mixed-Signal groups as well as in the Power by Linear Engineering Group. Assignments may be in IC design engineering (transistor and chip-level design, modeling, and prototyping), applications engineering (system design and evaluation of application circuits), and software engineering (software design to simulate and model circuits, microcontroller programming, and more).

Examples of VI-A Projects

- ▶ Translation of an RF modulator design from an all-bipolar process to BiCMOS.
- ▶ Design of software to automate evaluation of voltage controlled oscillators (VCOs).
- ▶ Instrumentation and evaluation of an on-chip buffer for a new analog-to-digital converter (ADC).
- ▶ A nanopower IC for the longest battery life in medical devices.
- ▶ An ultralow quiescent current buck switching regulator IC for the next generation of high efficiency cars and trucks.
- ▶ A new architecture for USB powered battery chargers for tablets and smart phones.
- ▶ A new architecture for an RGB LED driver with independent PWM control and fast settling time for 3D cinema and TV applications.
- ▶ Design of data-dependent jitter elimination circuit for high speed serial links.
- ▶ Integration of a switching power supply into a deep submicron CMOS process.
- ▶ Design of a high voltage, high output current drive operational amplifier.

Related Coursework

Classes that give a good idea of the typical work done at ADI are listed below. If you loved any of these classes, then you would make a good fit at Analog Devices!

- ▶ Undergraduate courses: 6.002, 6.003, 6.011, 6.012, 6.101, 6.102, 6.111
- ▶ Advanced undergraduate/graduate classes: 6.301, 6.302, 6.331, 6.374, 6.376, 6.775, 6.776

Assignment Locations

We have local design centers in:

- ▶ Wilmington, MA
- ▶ Chelmsford, MA
- ▶ Boston, MA
- ▶ Lyric Lab in Cambridge, MA
- ▶ Silicon Valley Headquarters in San Jose, CA

Other opportunities may exist in our regional offices:

- ▶ Greensboro, NC
- ▶ Colorado Springs, CO
- ▶ Phoenix, AZ
- ▶ Limerick, Ireland
- ▶ Shanghai, China

Benefits

Analog Devices participates in the VI-A Fellowship Program, which provides tuition, medical insurance, and a stipend during the final term after the senior year while students are finishing their master's thesis research at ADI. ADI will provide relocation assistance, as well as housing and/or transportation stipends to interns who need this additional benefit.

Intern Activities

VI-A interns are part of ADI's larger summer internship program, and enjoy summer intern activities such as talk and learn sessions, workshops, a wafer fab tour, intern presentations, and an end of summer outing. Talk and learn sessions cover technical talks held by members of the senior technical staff to introduce students to products and disciplines outside their assignments. Workshops are meant to provide career development coaching for interns' career growth and understanding.

"Doing 6-A with Analog Devices has provided me with a rich experience in circuit design. At Analog Devices, there are plenty of people who you can learn from, and they are always willing to help. Coming in with a rich background from MIT, my 6-A project enhanced it with applications of some of the concepts I learned in school. You will probably have a good project at Analog Devices where you will learn plenty of new things."

-George Kakuru, VI-A Alumnus (2016)

Foreign Students

International students are welcome with a valid F-1 or J-1 visa. A security clearance is not required. For some positions, ADI may have to obtain export licensing approval from the U.S. Department of Commerce — Bureau of Industry and Security and/or the U.S. Department of State — Directorate of Defense Trade Controls. As such, applicants may have to go through an export review process.

Drug-Free Workplace Requirements

Analog Devices does not have a policy on drug testing or screening.

Equal Opportunity Employer

Analog Devices is an equal employment opportunity/affirmative action employer M/F/D/V.

More Information

To learn more about Analog Devices, please visit:
analog.com/college

For more information about VI-A at ADI, please contact:
Natalia Hing natalia.hing@analog.com



Analog Devices, Inc.
Visit analog.com

For regional headquarters, sales, and distributors or to contact customer service and technical support, visit analog.com/contact.

Ask our ADI technology experts tough questions, browse FAQs, or join a conversation at the EngineerZone Online Support Community. Visit ez.analog.com.

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BR21537-6/19



Career Opportunities at Cadence for MIT 6-A Students

Company Overview

It's an exciting time at Cadence, as we further our Intelligent System Design strategy with innovative products that enable tomorrow's world! Cadence is the only company that provides the expertise and tools, IP, and hardware required for the entire electronics design chain, from chip design to chip packaging to boards and to systems, which allows our customers to create revolutionary products and experiences.

Thanks to the outstanding caliber of the Cadence® team and the empowering culture that we have cultivated for over 30 years, Cadence continues to be recognized by Fortune Magazine as one of the 100 Best Companies to Work For. We have differentiated ourselves through our shared passion for solving the world's toughest technical challenges, our dedication to pushing the limits of what's possible, and our drive to do meaningful work.

6-A interns will be a part of our global community of interns and recent graduates called CHIPs (College Hires and Internship Programs). CHIPs provides the opportunity to meet interns from different business groups, participate in formal and informal networking events, and attend learning and development seminars.

6-A Assignment Locations

Cadence is headquartered in San Jose, CA. The company has offices in Chelmsford, MA; Austin, TX; Columbia, MD; Endicott, NY; and Pittsburgh, PA; as well as other centers around the globe.

Thesis Topics

We have several areas of interest that can be initiated from a thesis and then transformed into an actual product, most of these will also result in patent work by the student.

- Modeling of circuits that cross substrate boundaries, and developing fast extraction and simulation models for cross-fabric (PCB/package/IC) circuitry
- Novel optimization techniques for solving otherwise NP-complete problems
- All aspects of photonics design, including layout, modeling, and simulation
- Using cloud computing to build/test/deliver software modules





Career Opportunities at Cadence for MIT 6-A Students

Foreign Student Employment

International students with a valid F-1 or J-1 are welcome.

Security Clearance Requirements

The majority of our positions don't require a security clearance. However, depending on the position, a function of the job with Cadence may require access to data that is restricted to U.S. export regulations. If the position offered does require the individual to be able to access export-restricted data, then the offer of employment is also contingent on the individual's ability to access the data in accordance with the regulations, which is based on their residency status. If they are not a "U.S. Person" (citizen, green card holder, or protected refugee), an export license may be required before access to the data is granted.

Drug-Free Workplace Requirements

Cadence is a drug-free environment and does not have a policy on drug testing or screening.

Financial Assistance

Cadence participates in the 6-A Fellowship Program, which provides tuition, medical insurance, and a stipend for one term.

Equal Employment Opportunity Policy

Cadence is firmly committed to Equal Employment Opportunity.

More Information

To learn more about Cadence, please visit www.cadence.com/go/university-careers

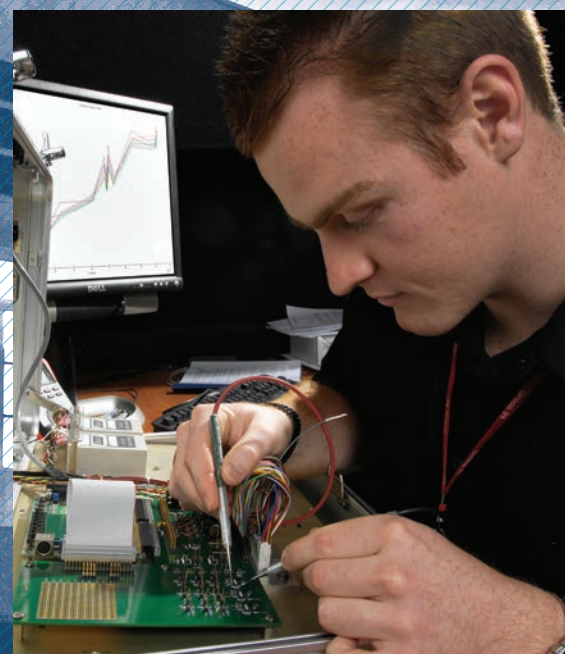
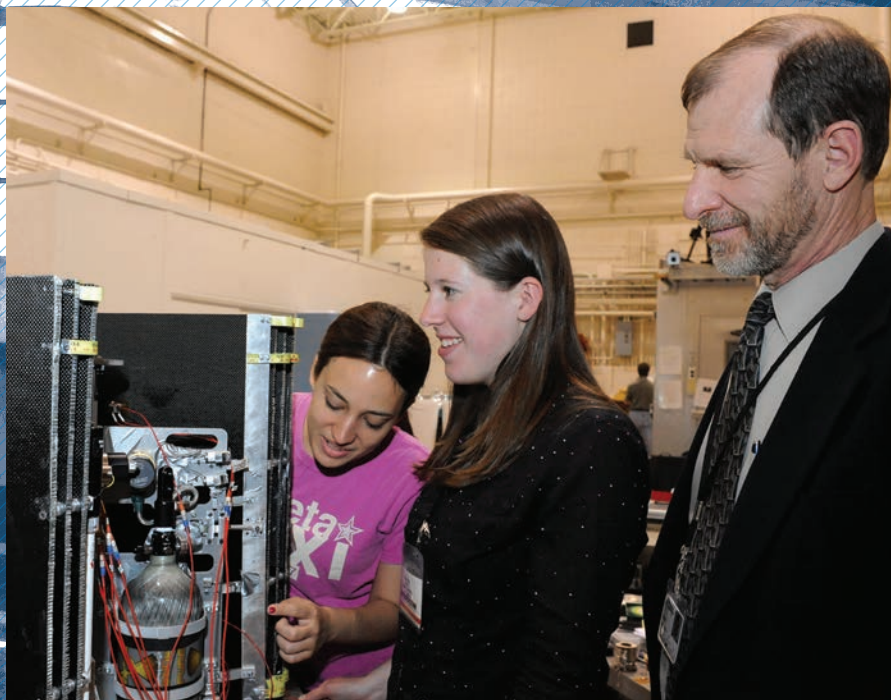


*Zachary Zumbo, former 6-A intern, now
Lead Software Engineer at Cadence, Recipient
of the 2019 Reintjes Excellence Award*



MIT Lincoln Laboratory

Create Prototype Deliver





Create Prototype Deliver

As a research and development center of MIT, Lincoln Laboratory offers 6-A students an exceptional environment for conducting research. The eight technical divisions of MIT Lincoln Laboratory perform basic research, develop devices and components, and design, construct, and test complex systems for the Department of Defense (DoD), Department of Homeland Security, NASA, FAA, and NOAA. MIT Lincoln Laboratory is located on Hanscom Air Force Base in Lexington, Massachusetts. While MIT 6-A students are pursuing their MEng degrees, they will be supported as Research Assistants at Lincoln Laboratory during the fall and spring semesters. A shuttle bus is provided so that students may commute to Lincoln Laboratory from campus.

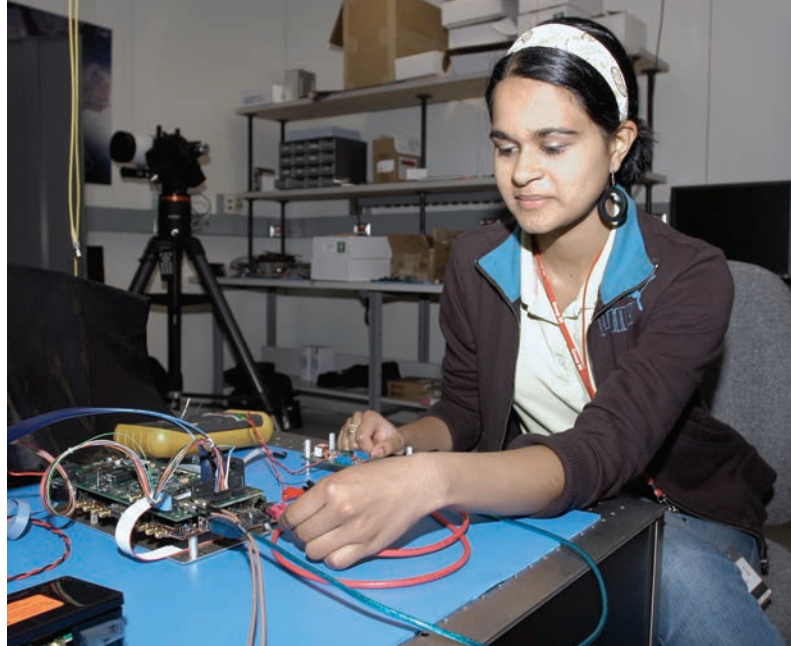
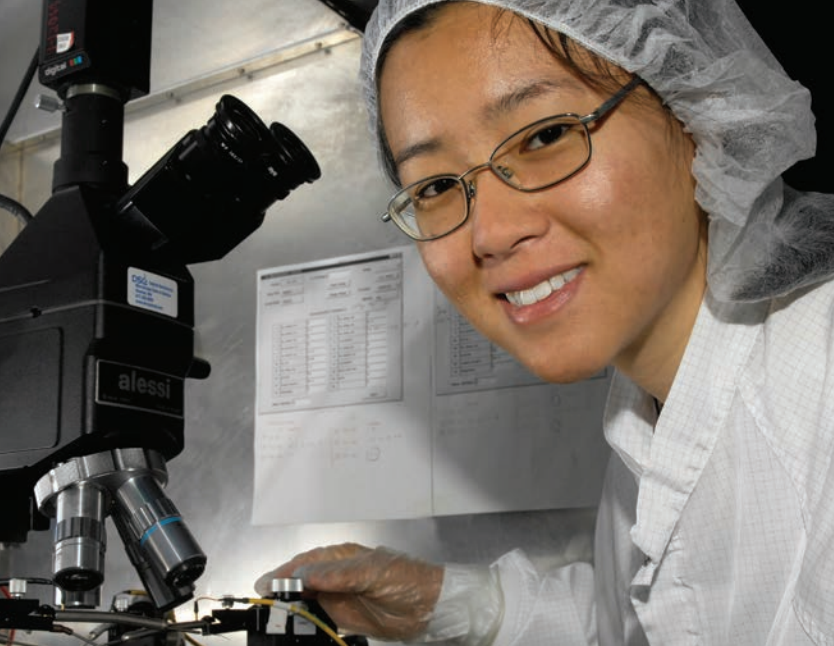
Major Capabilities and Research Areas

- Advanced imaging
- Advanced microelectronics
- Advanced RF technology
- Biological/chemical agent detection
- Communication systems
- Cyber security
- Environmental monitoring
- High-performance adaptive signal processing
- Homeland protection
- Integrated sensing and decision support
- Laser communications
- Net-centric architectures
- Open systems architectures
- Optics and lasers
- Rapid prototyping
- Space situational awareness
- Speech/language processing
- Systems analysis
- Threat assessment
- Weather sensing

Summer Housing: Subsidized housing on Northeastern University's campus up to 10 weeks for students whose permanent address is greater than 50 miles outside the Boston area.

MIT Lincoln Laboratory is an Equal Employment Opportunity (EEO) employer. All qualified applicants will receive consideration for employment and will not be discriminated against on the basis of race, color, religion, sex, sexual orientation, gender identity, national origin, age, veteran status, disability status, or genetic information. Since a security clearance is required by the DoD, **only students who are U.S. citizens can be considered.** Interested students should contact Gary Hackett, Office of Human Resources, 781-981-7056, or hackett@ll.mit.edu.

For more about our summer programs, please visit www.ll.mit.edu/careers/student-opportunities



Past Thesis Projects of Lincoln Laboratory 6-A Students

- Wideband active antenna cancellation
- Choosing a dielectric for graphene transistors
- Automated identification for weather avoiding air traffic flows
- Designing electronics for the missile alternative range testing instrument
- Tracking system for photon-counting laser radar
- Markov chain Monte Carlo and its applications of phylogenetic tree construction
- Tracking algorithms under boundary layer effects for free-space optical communications
- Radar tracking system development
- Epidemic modeling techniques for smallpox
- Application of three-dimensional circuit integration to global clock distribution
- Dynamic Bayesian networks for the classification of spinning discs
- Low-power image-based triggering for extended operation surveillance
- Multiple region finite-difference time-domain modeling of duct cavities
- Experimental study of the frequency correlation of space-time entangled photons
- Laser speckle modeling for three-dimensional metrology and ladar
- Finite-difference techniques for body of revolution radar cross section
- A pixel-level analog-to-digital converter for the imaging array of an advanced interferometer
- Spatial filter performance on point-target detection in various clutter conditions using visible images

»» How to Apply

Gary Hackett
Office of Human Resources
MIT Lincoln Laboratory
781-981-7056



Follow us on



www.ll.mit.edu

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WE ARE THE DATA AUTHORITY.



We are the Fortune 500 Company that manages and protects the world's data. We enable DreamWorks to use data to create the most imaginative stories. We enable Ducati to use data to build best in class sports vehicles. We enable enterprises to store and manage their data wherever they need it. We are the partners Google, Azure, and AWS clouds chose to enable data visionaries around the globe.

We are Big Data.



 **NetApp®**

YOU ARE A DATA VISIONARY.

OUR VI-A INTERNS GET TO WORK ON STUFF LIKE THIS AND MORE:

SELF HEALING DATA CENTER PROJECT

We protect and manage the world's data. That means... we are always pushing the innovation envelope. We think about both symbolic and statistical AI techniques (ranging from rule-based systems to deep learning) and how we can apply those techniques to enable our systems to heal themselves. What does that mean? Well, we have thousands of devices all over the world and those devices collect data about themselves. We have experts who understand the performance of those devices and diagnose problems on those systems, and we would like to automate our knowledge and build data driven models to enable these experts.

ALGORITHMS FOR INFRASTRUCTURE TOPOLOGY

Small to medium size physical enterprise infrastructures can be modeled and scaled in SQL with minimum compute resource requirements. However, this model inhibits scalability problems when physical enterprise infrastructure gets larger and spans multiple Data Centers, Regions, Hybrid networks and World. This project will concentrate on researching how to take current physical path based infrastructure topology and move it out of straight SQL into a more of a Big Data graph based technology that can provide compute level horizontal scaling in single and multitenant configurations for Software as a Service (SaaS) and traditional on-prem models.

AND GET TO LEARN THINGS LIKE THESE:

AI & BIG DATA

TENSORFLOW
PYTORCH
DATA SCIENCE/ML TECHNIQUES
HIVEQL
ELASTICSEARCH

SOFTWARE

REACT
ANGULAR
DOCKER
MONGODB
PYTHON
GRAFANA

CLOUD

AWS SERVICES
GOOGLE CLOUD
AZURE
CLOUD INFRASTRUCTURE
HYBRID CLOUDS

BECAUSE OUR VI-A PHILOSOPHY IS THIS:

We want you to get the best of both – corporate internship and academic research. We also want you to love your project, be motivated by the work you do and be supported by an amazing team of engineers. Our job is to give you a base to work with and help you learn the tools that will enable you to get creative. We will give you the guidance you need and the freedom you want to craft your thesis into something you can own and be proud of. We have been thinking about how to do VI-A the right way for a long time. It is not just an internship – it is your opportunity to become a subject matter expert and set up your career for years to come, and we will do everything in our power to give you the best experience, because we believe in teamwork and innovation, and we take care of our people. Speaking of which, our people are our biggest treasure, and we cannot wait for you to meet them.

YOU SHOULD COME WORK WITH US.

THESE ARE OUR VI-A LOCATIONS:

NetApp's Hybrid Work Model: Through experimentation and a growth mindset, we aim to empower employees to Thrive Everywhere and do their best work of their career

San Jose, California
Waltham, Massachusetts
Research Triangle Park, NC

THIS IS WHAT OUR VI-A STUDENTS SAY ABOUT US:

"NetApp has a culture of learning - you will have every opportunity to interact with people who know more than you do, and they, despite having every opportunity to ignore you, will choose to help you."

— Rebecca Kekelishvili

"10/10, would recommend to a friend."

— Tho Tran

THIS IS OUR TEAM.

There is actually nobody we like better. We have had 30 years to confirm it.

**Visa sponsorship available if applicable.*

 **NetApp**®

BECAUSE WE MAKE A GREAT TEAM.

THIS IS HOW WE TELL OUR VISION.

THIS IS WHERE WE WORK.

 **NetApp®**



THIS IS ONE OF OUR PRODUCTS.

 **NetApp**
INSIGHT
2018

THIS IS HOW WE CELEBRATE INNOVATION.

Appendix H.

6-A Affiliate Companies

For the most up-to-date information on the 6-A Core Partner Companies,
and for the list of Affiliate Companies, check the 6-A website:

<http://6a.mit.edu>



6-A Internship opportunities

AECG (Longmont, Colorado)

System-on-Chip Architect

As a member of AMD/Xilinx's Silicon Architecture group, the candidate will be involved in SoC architecture, performance benchmarking, and architectural analysis. Help develop compute accelerators, machine-learning implementations, and interconnection networks.

HW Debug SW Developer

Research and develop essential software and firmware tools that provide visibility and debug capability into applications running on complex heterogeneous processing units in real-time.

RTL/System Simulator SW Developer

Design and develop RTL/system simulation technology that is at the heart of our customers' verification and emulation solutions.

IP Security SW Developer

Develop software solutions to complex IP security challenges to help our customers protect their valuable design assets.

Machine Learning Researcher

As a member of AMD/Xilinx's Research Labs, we investigate emerging trends in machine learning and artificial intelligence which will impact future hardware devices and software tools. By building prototypes and proofs of concept, we help set the future direction of AMD.

AI Architect

As a member of AMD/Xilinx's AI Engine Architecture team, you would be part of the team responsible for the definition of the next-generation architecture for AI/ML inference at AMD. The AI Engine is a massively parallel, software programmable architecture focussed on AI/ML inference.

FPGA Architect

AMD's Xilinx group designs chips which let users optimize hardware to fit specific problems - domain specific hardware. These adaptable hardware devices are often the most power efficient and high-performance platforms. As an intern, you will understand and influence how we architect these platforms, and how we evaluate performance on them. You will learn about and help improve the software stack and algorithms that go in making hardware change for domain specific needs. You will

learn how one accelerates High Performance Compute, AI, Storage and Database Acceleration, wireless communication (5G) and a host of other domains.

HPC (Fort Collins, Colorado)

CPU Architect

Design the architecture/RTL, and/or perform functional verification, for the industry leading Ryzen/EPYC family CPUs' cache and floating-point systems

CPU Physical Design

Physical design of the Ryzen/EPYC family CPU's cache and floating-point systems, innovating to optimize performance, area, power, and design methodology.

2.5D/3D Chiplet SOC Design

As a member of the team that pioneered the groundbreaking AMD 3D V-Cache™ design, the candidate will work on designing the chiplet SOCs for advanced 2.5D and 3D integration

SRAM Circuit Design

Create custom, aggressive SRAM circuits in the most advanced technology nodes, for use across AMD's CPU and GPU products



Short company description:

Cambridge Mobile Telematics (CMT) is the world's largest telematics service provider. Its mission is to make the world's roads and drivers safer. The company's AI-driven platform, DriveWell®, gathers sensor data from millions of IoT devices — including smartphones, proprietary Tags, connected vehicles, dashcams, and third-party devices — and fuses them with contextual data to create a unified view of vehicle and driver behavior. Companies from personal and commercial auto insurance, automotive, rideshare, smart cities, wireless, financial services, and family safety industries use insights from CMT's platform to power their risk assessment, safety, claims, and driver improvement programs. Headquartered in Cambridge, MA, with offices in Budapest, Chennai, Seattle, and Tokyo, CMT serves millions of people through 80 programs in 18 countries, including 21 of the top 25 US auto insurers.

Locations (or remote work status) for 6-A assignments: Cambridge office, Seattle office, CMT is located in these states:

- Arizona
- California
- Colorado
- Connecticut
- DC
- Florida
- Illinois
- Louisiana
- Maryland
- Maine
- Massachusetts
- Michigan
- Montana
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- Ohio
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington

Examples of typical 6-A assignments and 6-A thesis topics.

All interns will have the following opportunities available to them:

- Gain practical experience with a wide variety of software engineering tasks
- Collaborate with skilled teams of software engineers (working in a team)

- Shadow and learn from seasoned professionals while they do their day to day work
- Deploy, unit test, system test (end-to-end test) and document features
- Be part of design, architecture and code review processes
- Participate in Agile scrum and sprint planning activities

Mobile development projects

Mobile / data analysis

- Description: MetricKit is an iOS framework for collecting and processing battery and performance metrics as well as crash diagnostics. Our SDK has a basic integration implemented but our backend does not process any data, so both the integration and processing could be improved. Since MetricKit could also provide insights into crashes that are not possible to catch with 3rd party solutions, we would also like to try implementing a crash reporter using MetricKit's crash diagnostics features.
- Specific learning opportunities: iOS, backend/cloud processing, crash reporting and symbolication
- Kind of work: mobile development and some data analytics work

Parallelize Bluetooth automation tests

- Description: CMT has a simulation framework which is used to run automated testing of Bluetooth (BLE) functionality between a phone and our IoT device. Current BLE simulation testing is set up to run tests serially. While each component of test infrastructure has some level of support running multiple instances at the same time, this may need to be revisited as we have not had a chance to run multiple instances. Python script changes are necessary to efficiently organize the tests/components and report test status.
- Specific learning opportunities: Python scripting, exposure to the continuous integration / continuous delivery pipelines and processes, mobile (Android and iOS) code and emulation/simulation, and IoT firmware test code.
- Kind of work: Python and mobile development

Write a sample app using the SDK and modern programming languages

- Description: CMT produces many sample apps to show customers how to use SDK features, but they are outdated, use legacy programming languages and are currently limited to basic features like authentication and trip recording. CMT would like to create new sample apps that include more features like a trip list display, interaction with data from our backend, or features for setting up our hardware with the app.
- Specific learning opportunities: iOS/Android design, swift/kotlin development, mobile app architectures, code design and implementation
- Kind of work: mobile system development

Cloud development projects

- Kind of work: Develop enterprise grade micro services cloud infrastructure software and production ready cloud infrastructure software, build and deploy CI/CD pipelines for production ready systems, improve existing infrastructure software for scaling, availability, reliability and maintainability.
- Example projects:

- Messaging platform to send user notifications: We have an infrastructure to send push notifications to mobile Apps. We need to improve and scale up this infrastructure as business requirements evolve.
- A/B testing framework for processing drives data: Our software must process vast amounts of sensor data and has to deal with all kinds of boundary conditions. Having a test framework for validating software changes is very valuable

Data Science projects

Use deep neural networks for identifying drive patterns from sensor data

- Description: Demonstrate that risky driving patterns can be learned from only sensor data (large amounts of unlabeled data) by using deep neural network methods.
- Specific learning opportunities: Apply knowledge of physics, signals/dynamics, deep learning, and machine learning methods to form practical formulations of real-world data representation problems and solve them.
- Kind of work: deep learning, signals/dynamics, machine learning, optimization

Develop algorithms and models for crash scene reconstruction

- Description: Develop algorithms and models for reconstructing a motor vehicle crash only from sensor data captured by smartphones and IoT sensors: demonstrate that events that occurred before, during, and after a crash, relevant to crash scene reconstruction, can be estimated using smartphone and IoT sensors
- Specific learning opportunities: Apply knowledge of physics, detection/estimation, and machine learning methods to form practical formulations of real-world problems and solve them.
- Kind of work: signal processing, optimization, machine learning

Estimate device orientation with respect to vehicle orientation

- Description: Identifying how the device is oriented with respect to the vehicle and identifying whether it is affixed to the vehicle in a stable position greatly helps processing of the raw sensor data captured by smartphones and IoT devices.
- Specific learning opportunities: Apply knowledge of physics and state estimation to come up with practical solutions to the problem.
- Kind of work: signal processing, optimization, machine learning

HR Follow Up Details:

- **Security clearance requirements (if any).** Our customers require zero felonies on record for any employee. We will conduct background checks on individuals upon joining.
- **Drug-Free Workplace Policy in Handbook:**
 - Notwithstanding the legalization of medicinal and recreational marijuana use under any applicable state law, marijuana remains prohibited under federal law. Employees who use or possess marijuana in the workplace or during work hours may be subject to reasonable testing and disciplinary action under this policy and subject to applicable law, up to and including termination of employment. This policy is intended to protect against



employees being impaired in the workplace and/or during work hours, and is implemented in an effort to maintain workplace safety.

- **Conditions for employment of international students—will they be considered? Type of visa acceptable (e.g. F-1, J-1, etc.).** Must have any acceptable/ valid work authorization and provide documents upon hire.
- **Housing and relocation information—any company assistance (e.g. hotel, rental car, any special arrangements for local housing).** We do not offer relocation or housing assistance.
- **Personal transportation needs and availability in the assignment area.** Interns who drive and work in the Cambridge office will be able to expense up to two days of parking fees.
- **Details of financial assistance given during graduate work term (if any).** None, but all 6A internships are paid internships.

About Cell Signaling Technology

Cell Signaling Technology (CST) is a private, family-owned company, founded by scientists and dedicated to providing the world's highest quality, innovative research and diagnostic products to accelerate biological understanding and enable personalized medicine. The mission of our Bioinformatics Department is to foster excellence in the art of combining data integration, software development, computer science, mathematics, and artificial intelligence, in order to decipher complex biological processes, enhance product development, and contribute to translational research.

VI-A at CST

Our employees operate worldwide from our U.S. headquarters in Massachusetts, and our offices in the Netherlands, China, and Japan. This year, CST is hiring one VI-A student for the Bioinformatics Department in Danvers, Massachusetts.

VI-A Projects

Student assignments are determined by matching the student's interest with our research projects. In particular:

Most biological operations at the cellular level are performed by proteins. In humans for example, there are about 20000 genes encoding those proteins. Like pieces of a puzzle, those proteins are able to assemble entire organisms. Proteins orchestrate a variety of processes that far exceed their numbers by taking part in a myriad of different interactions with each other. Many of those interactions are controlled by natural biochemical modifications applied to the amino acids that constitute those proteins. We refer to them as Post Translational Modifications (PTMs). Regulated networks of interacting proteins are responsible for normal cellular functions. Tumors for example are groups of cells where one or more networks have lost their ability to control (stop) grow. It is therefore important to understand protein regulation to offer biomedical solutions.

At phosphosite.org, we curate and offer the scientific community the world's most comprehensive record of phosphorylation events, which are the most common type of PTMs. Although thousands of PTM events are known and some of them are understood, there are potentially thousands events more awaiting to be discovered.

We are interested in using machine learning tools like TensorFlow to help us identify those unknown phosphorylation events and also to help us identify the most probable enzymes responsible for those modifications--called kinases. Identifying those kinases can help even more to understand and potentially control cellular processes.

Foreign Student Employment

CST does not sponsor visas.

Drug-Free Workplace Requirements

CST does not have a policy on drug testing or screening.

Transportation

Our headquarters is located in Danvers, MA, about 25 miles driving distance from Cambridge or Boston. Public transportation is available including a shuttle from the Beverly commuter rail station to CST offices; however access to a car may be more convenient.

Financial Assistance

As a 6A affiliate CST provides a salary for the summer and on-site semester.

Additional Information

For more information about VI-A at CST, please contact:

Chris Falling (cfalling@cellsignal.com)

Additional Resources

The following articles provide information on related research:

Gnad, F. et al. (2016) Phosphoproteome analysis of the MAPK pathway reveals previously undetected feedback mechanisms. *Proteomics*. 16, 1998–2004.

Hornbeck, P.V. et al. (2015) PhosphoSitePlus, 2014: mutations, PTMs, and recalibrations. *Nucleic Acids Res.* 43, 512–520.

Gnad, F. et al. (2010) Predicting post-translational lysine acetylation using support vector machines. *Bioinformatics* 26, 1666–1668.

Gnad, F. et al. (2007) PHOSIDA (phosphorylation site database): management, structural and evolutionary investigation, and prediction of phosphosites. *Genome Biology* 8, R250.



CST: Rooted in Science

To learn more about CST, please visit www.cellsignal.com.

Short company description

IBM Research: We're a group of researchers, scientists, technologists, engineers, designers, and thinkers inventing what's next in computing. We're relentlessly curious about all the ways that computing can change the world. We're currently obsessed with advancing the state of the art in AI and hybrid cloud, and defining the future of quantum computing. The confluence of the technologies we're building represent a step change in computing that will surpass anything we've seen before. Together, they can exponentially alter the speed and scale at which we can uncover solutions to complex problems. We've come to call this [accelerated discovery](#).

[Watch: Who we are](#)

We're discovering the new materials that will become the next generation of computer chips; we're building bias-free AI that can take the burden out of business decisions; we're designing a hybrid-cloud platform that essentially operates as the world's computer. We're moving quantum computing from a theoretical concept to machines that are redefining industry and society.

The problems the world is facing today require us to work faster than ever before. We see it as our duty to catalyze scientific progress by taking the cutting-edge technologies we're working on, scaling them, and deploying them with partners across every industry and field of study. Our goal is to be the engine of change for IBM, our partners, and the world at large.

With around 3,000 researchers in 17 locations around the world, [IBM Research](#) is one of the world's largest and most influential corporate research labs for the last 77 years. We invent technologies that matter to the world. Today, we are pioneering the most promising and disruptive technologies that will transform industries and society, including the future of [AI](#), [hybrid cloud](#), and [quantum computing](#), and [accelerated discovery](#) for science. Join us as we invent the future of computing!

Locations (or remote work status) for 6-A assignments.

Cambridge, MA

Albany, NY

Yorktown Heights, NY

Examples of typical 6-A assignments and 6-A thesis topics.

6-A MEng students teamed up and completed an internship with IBM Research's advanced prototyping team on AI projects, often developing web applications to solve a real-world issue or business use cases. Here, the students worked alongside AI engineers, user experience engineers, full-stack researchers, and generalists to accommodate project requests and receive thesis advice, says Lee Martie, IBM research staff member and 6-A manager. The students' projects ranged from generating synthetic data to allow for privacy-sensitive data analysis to using computer vision to identify actions in video that allows for monitoring human safety and tracking build progress on a construction site.

Security clearance requirements (if any).

7 year background check.

Drug-Free Workplace requirements.

N/A

Conditions for employment of international students—will they be considered? Type of visa acceptable (e.g. F-1, J-1, etc.).

IBM Research welcomes international students to apply for our roles. Typically, an F-1 or J-1 visa is acceptable.

Housing and relocation information—any company assistance (e.g. hotel, rental car, any special arrangements for local housing).

A 6-A Student assigned to an IBM location more than fifty (5) miles from MIT's campus in Cambridge, Massachusetts will receive a one-time reimbursement of US \$4,000 for relocation and living expenses. A 6-A Student assigned to an IBM location within fifty (50) miles of MIT's campus in Cambridge, Massachusetts will not be reimbursed for relocation and living expenses.

Personal transportation needs and availability in assignment area.

Albany - would need car/personal transportation to site.

Cambridge - could take public transportation/train to the lab.

Yorktown - would need car/personal transportation to the site; site shuttle available from White Plains.

Details of financial assistance given during graduate work term (if any).

N/A



Inkbit Corporation
1 Cabot Road
Medford, MA 02155
Tel: +1-781-874-2831

Inkbit is a 3D printing company transforming the way products are manufactured. Our 3D printing technology, Vision Controlled Jetting (VCJ), leverages advances in machine learning and machine vision to produce durable multi-material parts at high throughput and low-cost. Parts produced with VCJ are used in a variety of industries and application areas such as medical, robotics and industrial machinery. Our team is highly interdisciplinary, combining world-class expertise in materials, hardware, and software. Inkbit is a CSAIL spinout founded by a team of MIT students, faculty, and alumni.

Projects for 6-A Students

Digital Design and Computer Graphics

Inkbit is looking for a motivated student passionate about computer graphics, design, and digital fabrication. The student will learn about the latest methods and implement a selection of the algorithms to enhance our interactive 3D design tool. The topics include numerical simulation, geometry processing, rendering, and optimization. Our goal is to provide designers with an advanced design software to create and visualize stunning 3D objects that can be manufactured using Inkbit's 3D printing technology. The design tools will be used by designers and engineers around the world and will have a direct impact in disrupting how products are designed and manufactured.

3D Computer Vision and Machine Learning

Inkbit is looking for a motivated student passionate about computer vision and machine learning. The student will learn the state-of-the-art methods and implement a selection of algorithms to improve 3D geometry processing for the real-time computer vision system. The relevant topics include: 3D scanning, machine learning for 3D geometry processing, and high-performance computing. The task of the internship is to work with Inkbit's research scientists to develop a layer of intelligence for the next generation manufacturing machines. The internship will focus on modeling of the 3D data captured by Inkbit's real-time scanners for control of a 3D manufacturing system.

We are located at 1 Cabot Road Medford MA 02155 4th Floor, and we expect employees to work on site.

There are no security clearance requirements.

No Drug-free Workplace requirements.

International students with CPT eligibility will be acceptable.

No assistance with housing, we are right off the orange line at Wellington Station. There is plenty of outside parking available.

Students will receive a competitive salary.

Overview

Iterative Scopes is fast becoming the leader in computational gastroenterology by pioneering the application of powerful, proprietary artificial intelligence tools to the practice of gastroenterology and drug development. Using multi-modal datasets obtained through exclusive partnerships and research collaborations, the company is aggregating the leading training data repository, forming the foundation of its software algorithms. This software fits seamlessly into existing clinical workflows to support physician decision making and clinical trial acceleration.

Iterative Scopes was spun out of MIT in 2017 and is based in Cambridge, MA, with offices in San Francisco, CA and Dallas, TX.

Sample 6A Assignments and Thesis Topics

- Applying computer vision / machine learning to improve quantification of disease severity
- Applying computer vision / machine learning to improve polyp detection in colonoscopy
- Applying machine learning to enhance drug treatment prescription and dosage
- Using computer vision to quantify visual classification during medical procedures

Given the fast-paced nature of our technology development, participants in the 6A program will have the ability to work on a variety of different high impact projects and will have the ability to partially customize their assignments.

Other Information

Location for 6A assignment: 675 Massachusetts Ave, 2nd Fl, Cambridge, MA 02139 (Central Station red line)

Work Authorization Restrictions: None

Security Clearance Requirements: None

Drug-Free Workplace Requirements: None

MIT 6A Contact: Daniel.Wang@iterativescopes.com, Tammy.Cheng@iterativescopes.com



Jet Propulsion Laboratory
California Institute of Technology

Do you like to test your limits—to see what you can achieve? Maybe you aspire to do something important, audacious, world-changing. Or to work alongside the greatest minds in your field. Maybe you want answers to the Big Questions that have captivated humankind through the ages. You can discover all that and more at JPL.

About: The Jet Propulsion Laboratory—we call it JPL, or simply the Lab—is a federally funded research and development center (FFRDC) for robotic space and Earth science missions. We are managed by Caltech for NASA. Since the 1930s, JPL creations and discoveries have led to many of the nation's “firsts,” including the first U.S. Earth-orbiting satellite, interplanetary spacecraft, lunar lander, planetary rover, and first spacecraft to leave the solar system. A unique blend of decades of experience, combined with a drive for innovation and development, propels JPL to consistently achieve success in our missions. Our role as an operating division of Caltech profoundly shapes the intellectual environment, while our relationship with NASA instills a sense of mission. Together, they allow us to serve the greater good. As our vision states, “We serve the nation by exploring space in pursuit of discoveries that benefit humanity.”

Culture: Part of the thrill of being at JPL is working with the experts in their fields. Our campus in the Southern California foothills fosters plenty of broadband intellectual exchanges through both planned and chance encounters with colleagues. Over time, such relationships have forged a culture that binds JPLers together—and sets them apart from everything else. When science, technology, and engineering collide, a work-place culture unlike any other is created, where creativity is not only encouraged, but also backed up by a deep ability and drive to achieve. At JPL, we all have a vested interest in each other, because our mission won't succeed unless we all succeed. It's a simple reality with a powerful effect – when you need help, it will always be there, because what elevates one will elevate us all.

While diversity and inclusion are worthy ideals, at JPL, they are more than that – they are mission-critical necessities. Our Lab depends on an inclusive workforce of independent-minded people. We seek out different voices to contribute to the science, engineering, technology, and business discourse. As the saying goes, if you get five JPLers together, you will have at least seven viewpoints. This give-and-take characterizes our meetings and decisions, and strengthens our designs, plans, and results. It's also part of what makes working at JPL so stimulating, challenging, and fun. Consider the universe that we explore every day. There is nothing homogenous or monochromatic about it—and it is magnificent. Why should our workforce be any different?



Jet Propulsion Laboratory
California Institute of Technology

Teamwork: There is no one “typical path” at JPL. Scientists at the top of their fields from planetary science to astrophysics; from geology to atmospheric science, work together with engineers who work from orbit design to power supplies, from to testing on the ground here, to operating spacecraft on the surface of other planets. People work across disciplines, education levels, skills, and specialties to achieve success. Everyone is encouraged to learn, grow, and expand as they progress in their careers, and pathways are always open to try and learn something new.

Purpose: Our scientific targets are spread across our planet, throughout our solar system, and out into the universe. Earth-orbiting satellites use the vantage point of Earth orbit to make observations of our ever-changing world, while planetary landers let us virtually touch the surface of other worlds. Telescopes from the vantage point of space are able to peer out beyond our current physical reach, and even discover thousands of new worlds around other stars that were once unimaginable.

Of these targets, we seek to answer some of the biggest questions that exist: how did the universe, our solar system, and life begin? How are they evolving now? Is there life beyond Earth? How can we improve humanity with what we discover and learn? Are you ready to tackle these problems and “dare mighty things?”

Opportunities: JPL has a wide variety of opportunities related to Electrical Engineering and Computer Science across our Engineering and Science Directorate, our Office of Safety and Mission Success, and our Information Technology and Solutions Directorate. Particular areas of interest include:

- Artificial Intelligence and Machine Learning
- Autonomy and Control Systems
- Cybersecurity
- Data Science/Data Analytics
- Embedded Software/Flight Software
- Electronics and Mechatronics
- Hardware & Software Quality Assurance
- Human-Computer Interactions
- Modeling and Simulation
- Software Verification and Validation

@NASAJPLCareers

FAQs:

Locations (or remote work status) for 6-A assignments?

Both hybrid and physical opportunities are possible. All research opportunities in person would take place in Pasadena, CA

Security clearance requirements (if any)?

None. However, a background screen must be completed and passed prior to starting at JPL. This includes a criminal background check and employment verification check.

Drug-Free Workplace requirements?

Drug screen and drug test is required to be passed prior to start at JPL.

Conditions for employment of foreign students—will they be considered? Type of visa acceptable (e.g. F-1, J-1, etc.)?

This is dependent upon individual job responsibilities and project requirements.

Housing and relocation information—any company assistance (e.g. hotel, rental car, any special arrangements for local housing)?

Relocation is provided, which includes travel reimbursement to and from Pasadena, CA and bi-weekly housing stipend.

Personal transportation needs and availability?

Student is responsible for their own transportation to/from JPL for in-person research opportunities.

Details of financial assistance given during graduate work term (if any)?

To be negotiated as part of the selection process.



MIT 6-A

Lawrence Livermore National Laboratory (LLNL) is one of the largest Department of Energy defense labs. The Lab's primary mission is to ensure the safety and security of the United States nuclear stockpile. LLNL is a high-performance computing (HPC) laboratory hosting the second fastest computer in the world today. We address multiple missions and security levels and strive to simultaneously make best use of today's technology while aggressively pursuing future technologies.

At LLNL, our greatest asset is our people. We have a motivated and agile workforce that can easily move between, and apply their skills to, different projects, disciplines, or even industries.

As a multidisciplinary applied science laboratory, LLNL has scientists and engineers with extensive experience applying computational solutions to a broad set of technical problems in fields such as materials science, energy, nanotechnology, and bioscience.

We welcome MIT students interested in cutting edge technology with a purpose!

As an ECE major you will be working in one of two directorates depending on your interest: Computation or Engineering. Our computer scientists and engineers work on projects on the world's largest laser to chips for the brain that will impact brain damage and disease.

Location: All 6-A assignments are in Livermore California. Livermore is located in a beautiful wine county located approximately 50-miles East of San Francisco.

Citizenship: Most of our work is classified and our goal is to take you from student to full time hire, we prefer students with US Citizenship.

Drug tests are required for all internships.

Housing: We do not provide compensation for housing but offer support for finding housing during your internship.

Personal Transportation: Many students find housing within 5 miles of the Laboratory and take their bike to work.

Financial Assistance: Masters students are paid \$1650 a week during their internships. If hired, we offer tuition reimbursement for MS or PhD degrees. Local universities include Stanford, UC Berkeley and UC Davis

Sample Projects:

Adaptive Optics work with leading experts in the fields of [adaptive controls](#) and [dark matter](#) to develop engineering solutions in control systems and high-speed instrumentation for quantum information systems.

The student will have flexibility to determine the emphasis of their efforts; options include evaluation and implementation of novel algorithms for National Instruments USRP FPGA- based software-defined-radio targets, C++/Python/LabVIEW host applications design, state- space algorithms development.

Cyber Security: Conduct research on developing a mathematical framework for detecting spoofing attacks injected into streams of normal data. This is a hierarchical framework, and the student will develop the optimum framework, and how to cluster the various constituent components, in order to best detect such attacks.

RF/microwave sensing in challenging environments. Electromagnetic waves at high frequencies (RF/microwave) are an effective and versatile probe for complex materials because they readily penetrate a variety of materials and their short periods permit measurement of relevant transient events. This project involves the utilization of RF/microwave high-frequency techniques to sense and characterize critical aspects within challenging and dynamic environments.

MIT 6A Contact: Sandra Jew jew4@llnl.gov



Software Engineer Intern/Co-op 2023 (remote)

About Us:

Mercari is Your Marketplace. We make it super easy to sell (or buy) almost anything. We all have things we don't use, never used or simply outgrew. But that stuff still has value. Mercari gives you the power to simply sell it, ship it, and earn some cash for it. Fashion to toys. Sporting goods to electronics. All the brands you know and love. Our mission is simple: to make selling easier than buying. And with 50M+ downloads in the U.S. and 350k+ new listings every day, we're just getting started.

Mercari is seeking highly motivated software engineering students eager to learn and gain practical industry experience in the areas of Backend, Data, and Machine Learning engineering. Interns/co-ops will develop and validate software for Mercari's current and future products and programs. We want you to challenge the way we think and work, and be an impact on the future of Mercari.



What you'll be doing:

You will contribute to cross-functional system architecture, software system design, analytics applications, and rapid prototyping. During your time at Mercari, you will rotate through different engineering domains receiving both experience and guidance in each area. Mercari will provide you with the necessary equipment for your work. Depending on your skills, experiences, and interest, you will be working on some of the following:

- Coding in Go and Python
- Work with/on microservices running in Google Cloud
- Work with Product Managers and Designers for the design and specification of our product
- Collaborate with iOS and Android engineers to develop new features for our product
- Collaborate with ML and Data Engineers to develop and bring to production new features on our product

What you'll need:

- **Go Bold:** eagerness to learn new technologies and gain industry experience. Capable of thinking outside the box and executing on them
- **Be a Pro:** always proactive and seeking ways to improve. Capable of staying focused, communicating clearly, and collaborating with others from the beginning to the end. Have a hunger to get things done
- **All for One:** work well with others to achieve goals together
- Knowledge of data structures, computational and spatial complexity, and other computer science subjects
- Experience in working on a team to push code into production

Interview process:

- Phone interview: introduction (15 minutes)
- Video interview 1: Technical + Behavioral (30 Minutes)
- Video interview 2: Technical + Behavioral (30 Minutes)
- Video interview 3: Discovery Problem (30 Minutes)

Why Mercari:

- Small enough to make an impact, but established enough to provide the stability you need to be successful, Mercari is the best of both worlds. At Mercari you are encouraged to take risks. And when you do, you can do it confidently, knowing you have a team and a company that supports you
- As we grow, your career opportunities with Mercari grow. As our teams expand, your responsibilities expand. Our teams are supported with access to new tools, technologies, and learning opportunities. We will never stop growing



OVERVIEW: The MIT-IBM Watson AI Lab is a community of scientists from MIT and IBM Research dedicated to pushing the frontiers of artificial intelligence and translating breakthroughs into real-world impact. Founded in 2017, the Lab works with industry to translate fundamental science into applications that solve immediate problems in the business world and beyond. The Lab currently manages a research portfolio of more than 80 projects, with an emphasis on data-driven, deep learning approaches to understanding language and the visual world and techniques for making large-scale AI systems more efficient and robust, and a variety of decision-making applications. In all of its work, the Lab is committed to building trustworthy and socially responsible AI systems.

At MIT and IBM Research, we approach our physical, interpersonal, and organizational environment with intentionality, balancing the group energy and transparency of open spaces with the need for deep focus that quiet privacy provides. We cultivate an academic ethos and work-style while also tapping into the power of our institutions as global leaders in science and technology.

Participants will develop their software engineering skills, get professional perspective on the impact of AI, and work on AI-related projects with the potential for real-world impact.

LOCATION: MIT-IBM lab in Cambridge, MA



EXAMPLES OF PAST PROJECTS:

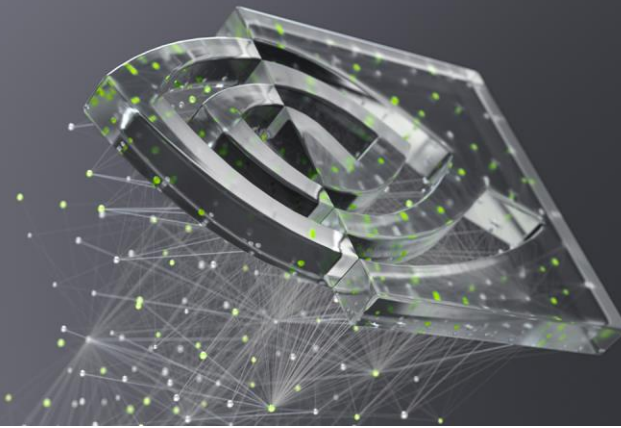
- Robust learning with limited labeled data
- Cross-domain few-shot action recognition
- Efficient deep learning
- Advancing machine learning with optimal transport
- Knowledge-graph based financial forecasts
- Improving supply chain decisions through fine-grained forecasts

OTHER INFORMATION:

Security clearance requirements – None
Drug-free workplace requirements - None
Housing and relocation assistance – None
Transportation – Public Transit Accessible



INVENT THE FUTURE WITH US



YOUR FUTURE STARTS HERE

NVIDIA's invention of the GPU sparked the PC gaming market. The company's pioneering work in accelerated computing—a supercharged form of computing at the intersection of computer graphics, high performance computing and AI—is reshaping trillion-dollar industries, such as transportation, healthcare and manufacturing, and fueling the growth of many others.

FIND YOUR PERFECT FIT

There are endless opportunities at NVIDIA, and you have the freedom to explore them all. It is all about landing where you are the most valued, challenged, and inspired in your work.

Below are general hiring areas for NVIDIA. Check out where your skills fit and search for your area of interest at www.nvidia.com/university for more specific roles.

HARDWARE

ASIC DESIGN	<ul style="list-style-type: none"> > Familiar with digital systems, VLSI design, computer architecture, computer arithmetic, CMOS transistors, and circuits <p>Programming Skills: Verilog/VHDL, C/C++, Perl</p>
VERIFICATION	<ul style="list-style-type: none"> > Experience or relevant coursework in GPU or processor verification/validation > Experience or relevant coursework with directed/random functional testing including writing test plans and directed/random diagnostics > Experience or relevant coursework developing software infrastructure for validation of architecture <p>Programming Skills: Verilog, C/C++/UVM, Perl</p>
PHYSICAL DESIGN	<ul style="list-style-type: none"> > Understanding of Synthesis, static timing analysis, clock/power distribution and analysis, RC extraction and correlation, place and route, and circuit design and analysis > Tools: ICC2, Design Compiler, PrimeTime from Synopsys and First Encounter, Innovus, Virtuso from Cadence <p>Programming Skills: Perl, C, C++, TCL, Scheme, Python, SKILL and Make</p>

ARCHITECTURE

COMPUTER ARCHITECTURE	<ul style="list-style-type: none"> > Knowledge and coursework in computer architecture, and one or more of focused areas (computer graphics, deep learning, ray tracing, parallel programming, memory architecture, and high-performance computing systems) > Passion for learning/developing functional and performance simulators > Understanding workload/architecture interactions, and analyzing RTL and silicon behavior > Experience in one or more of these following fields: PC/Workstation/console graphics, hardware/software development, HPC (MPI, OpenMP), robotics, self-driving cars, rendering, or computer vision <p>Programming Skills: C++, scripting languages (Python, Perl), modern graphics APIs (DirectX, OpenGL, Vulkan), modern GPGPU APIs (CUDA, OpenCL), revision control (Perforce, Git)</p>
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ARTIFICIAL INTELLIGENCE

DEEP LEARNING APPLICATIONS AND ALGORITHMS	<ul style="list-style-type: none"> > Solid knowledge of deep neural networks with experience in developing deep learning frameworks such as PyTorch and TensorFlow > Understanding of mathematical fundamentals (linear algebra/numerical methods) and/or computer vision areas > Solid foundations of software design, computer memory model (disk, memory, caches), CPU and GPU architectures, networking, and numeric libraries > Experience in design and development of embedded systems, drivers, and real-time software <p>Programming Skills: Python, C, C++, CUDA NVIDIA Projects: Riva (Conversational AI), Metropolis (Smart Cities), Clara (Medical Imaging), and more</p>
AUTONOMOUS VEHICLES	<ul style="list-style-type: none"> > Experience with training frameworks (Tensorflow, Keras, or Pytorch) > Background in one or more of the following: computer vision, mapping/localization, SLAM, sensor input devices (LiDAR, cameras, radars), image processing/segmentation <p>Programming Skills: C/C++, Python, CUDA NVIDIA Projects: DRIVE</p>
ROBOTICS	<ul style="list-style-type: none"> > Experience working with autonomous vehicles or robotics stack > Experience with simulators, designing and building validation frameworks for machine learning/deep learning, and working with cloud technologies > Good operating systems and data structure knowledge (threads, processes, memory, and synchronization) > ROS, physics simulation software, computer graphics, version control, and computer vision <p>Programming Skills: C/C++, Python, CUDA, OpenGL NVIDIA Projects: Isaac SDK, Isaac Sim, Omniverse, Jetson AGX Xavier</p>
DEEP LEARNING FRAMEWORKS AND LIBRARIES	<ul style="list-style-type: none"> > Building underlying frameworks and libraries that accelerate deep learning on GPUs > Experience with performance-oriented parallel programming, optimizing for high performance computing, or algorithms/numerical methods fundamentals > Experience with one or more of the following: Docker containers, computer architecture, large complex codebases <p>Programming Skills: Python, C, C++, CUDA NVIDIA Projects: Deep Learning Frameworks, TensorRT, cuDNN</p>

WHAT WE DO.

Autonomous Machines	Healthcare
Cloud and Data Center	High Performance Computing
Deep Learning and Artificial Intelligence	Self-Driving Cars
Design and Pro Visualization	Gaming and Entertainment

WHERE WE WORK.

- > Austin, TX
- > Bethesda, MD
- > Boulder, CO
- > Champaign, IL
- > Durham, NC
- > Hillsboro, OR
- > Holmdel, NJ
- > New York, NY
- > Pittsburgh, PA
- > Redmond, WA
- > Santa Clara, CA
- > Seattle, WA
- > Toronto, Canada
- > Westford, MA

A TRULY INCLUSIVE CULTURE.

- > **EVERYONE IS WELCOME.** Every background offers a new perspective that can only help us grow smarter and better.
- > **EVERYONE HAS A VOICE.** Great ideas drive us, no matter who or where they come from.

HOW TO APPLY.

- 1. EXPLORE INTERNSHIP AND NEW COLLEGE GRADUATE OPPORTUNIES.** Check out our general hiring areas above and see where your skills and interests may fit. Search for your area of interest at www.nvidia.com/university and apply directly there!
- 2. GET NOTICED.** Make sure your resume aligns with the roles you’re interested in. Our teams like to see your technical and programming skills through cool projects.
- 3. HEAR BACK.** Once your online application has been submitted; you will hear back within 2-3 weeks if there is a match.

If you met us at an event or career fair, you still need to apply online.



Company Description

As the world leader in lighting, Signify, formerly Philips Lighting is constantly ahead of the curve. Through our leadership in connected lighting and the Internet of Things, we're breaking new ground in data analytics, AI, smart homes, offices, cities, and more! Our energy-efficient lighting products, systems & services enable our customers to enjoy a superior quality of light and make people's lives safer and more comfortable, businesses more productive, and cities more livable.

Signify is one of the few companies in the world to achieve carbon neutrality, and our next sustainability goals are even bolder: doubling our positive impact on the environment and society by 2025. With 2021 sales of EUR 6.9 billion, approximately 37,000 employees, and a presence in over 70 countries, we're unlocking the extraordinary potential of light for brighter lives and a better world.

Signify Research is a global team with a presence in Burlington, where performance is powered through diversity. We shape the future of light in the Internet of Things and work on our commitment to achieve a more sustainable future.

Project descriptions

Imagine lights that personally illuminate a space for whomever is in a room and how they feel. At Signify Research, we are working on context-aware adaptive scene recommendation solutions for our connected home lighting systems. These lights can be remotely controlled and change to any color, hue, and mood. Based on user-system interactions for millions of customers, we work to design a recommender system to automatically knows the best lighting recipe given activity, space, user's preferences, day and time.

Potential Projects Include but not limited to: AI/ML Research, Horticulture/Aquaculture Research, Deep

Learning Research Engineers, Computer Vision, Object Detection, Big Data, IoT Infrastructure, Electrical Engineering, Optical Engineering, Technical Customer Support

Locations:

Burlington, MA

Remote

Menlo Park, CA

Foreign Students: Yes (F-1, CPT, OPT) – must be currently enrolled in school

DRUG AND ALCOHOL POLICY: All internship students should follow all Signify policies.

DETAILS OF FINANCIAL ASSISTANCE GIVEN DURING GRADUATE WORK TERM (if any): Signify will pay salary to internship students during graduate work term.

HOUSING AND RELOCATION: We do not offer relocation assistance.



Tutor Intelligence is an early-stage MIT startup spun out of CSAIL to build generalized robot systems capable of making visual decisions and adapting to a changing environment.

We are putting the power of advanced AI and robotics in the hands of manufacturers and packagers to solve labor shortages and improve working conditions. We solve novel problems at the intersection of deep learning, robotic manipulation, teachable human-machine interfaces & fleet management.

See more @ tutorintelligence.com

Examples of typical 6-A assignments and 6-A thesis topics.

- Graphical, Web-Based Approaches to Convey Intent to a Robot Worker.
- Vision-Based Reinforcement Learning for Robot Manipulation.
- Object Segmentation and Registration in the Wild.
- Centralized Cloud Management of Deployed Robots and AI Models.
- A Data & ML Pipeline to Automatically Learn New Robotic Tasks at Scale.

Locations (or remote work status) for 6-A assignments.

Downtown Boston (6 minutes from Downtown Crossing - Red Line)

Security clearance requirements (if any).

N/A

Drug-Free Workplace requirements.

N/A

**Conditions for employment of international students—will they be considered?
Type of visa acceptable (e.g. F-1, J-1, etc.).**

We are a small startup, and happy to try to make things work!

Housing and relocation information—any company assistance (e.g. hotel, rental car, any special arrangements for local housing).

N/A

Personal transportation needs and availability in assignment area.

Must be available for in-person work in our downtown Boston office.

Details of financial assistance given during graduate work term (if any).

Market Salary & Health Insurance

Any other pertinent information or data.

N/A



What is Vividly?

Formerly known as Cresicor and founded by a MIT alumnus, we are a high-growth startup that aims to transform trade management between manufacturers of consumer-packaged goods (CPG companies) and their retailer partners and distributors.

We develop an analytics-rich software system that replaces the current spreadsheet workflow that CPG companies use to manage their trade. We have amassed a client base of industry leading brands and now manage over a hundred million of their trade dollars.

We're rapidly growing, and are now working with larger and larger companies that have a diverse set of needs. This has led to some interesting technical challenges, and we're looking for your help in scaling and improving our product.

Here are some of the brands we work with—try looking for them in your next visit to the grocery store!



What will I do?

As a prospective intern, you will:

- Work as part of a small, agile, and fast-moving team
- Choose from a wide variety of projects to work on, ranging from building machine learning models to improving user-facing analytics and interfaces
- Gain insight into CPG industry business models and pain points that our customers face • Use your skills and insights to help plan, develop, and own new tasks and projects

What are the qualifications?

We're looking for:

- Hard-working, passionate individuals, with strong analytical and communication skills • Ability to readily learn new technologies from the get-go
- Willingness to work with a diverse set of people with different backgrounds • Experience with Python and JavaScript
- Bonus points for familiarity with any of: Azure/AWS/GCP, Docker/Kubernetes, Python

data science libraries (e.g. Pandas/Numpy), Relational/NoSQL databases

🌐 Where are opportunities located?

Vividly is a fully remote company, and you can work from anywhere.

🌐 Does Vividly hire international students?

At this time we do not hire international students sadly. :(

🌐 What does the interview process look like?

A take home test, a live coding interview and a behavioral interview with our CTO

🌐 What financial assistance does Vividly provide?

All interns are paid as contractors, and we offer a competitive hourly salary. We also provide the following perks and benefits to interns:

- Weekly \$20 meal credit
- \$100 stipend for internet

🌐 More questions?

For more information about pursuing a 6-A thesis at Vividly, please contact:

Arezou Akbarpour (arezou@govividly.com)

You can also visit us online at <https://www.govividly.com/>