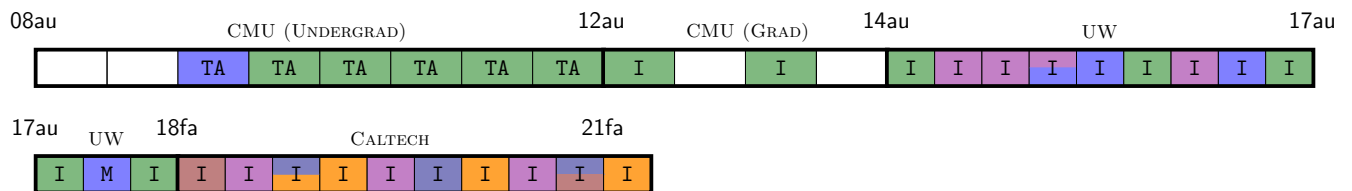


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EMPLOYMENT **Teaching Professor** 2022 –
 Computing and Mathematical Sciences, California Institute of Technology, Pasadena CA
Teaching Assistant Professor 2020 – 2022
 Computing and Mathematical Sciences, California Institute of Technology, Pasadena CA
Lecturer 2018 – 2020
 Computing and Mathematical Sciences, California Institute of Technology, Pasadena CA
Lecturer 2014 – 2018
 Computer Science and Engineering, University of Washington, Seattle WA

EDUCATION **Carnegie Mellon University** 2012 – 2014
 Master of Science in Computer Science
 Thesis: *Technological and Pedagogical Innovations for Teaching Introductory Discrete Mathematics to Computer Science Students*
 Advisors: *Randy Bryant, Klaus Sutner*
Carnegie Mellon University 2008 – 2012
 Bachelor of Science in Computer Science, Minor in Mathematics



■ Mathematical Foundations of CS ■ CS2 ■ Data Structures
■ Algorithms in the Real World ■ Software Design ■ Computing Systems
TA Teaching Assistant I Instructor M Mentor

HONORS New Horizons Diversity, Equity and Inclusion Award 2022
 Northrop Grumman Prize for Excellence in Teaching 2021
 CMS and IST Gradient for Change Award 2021
 Caltech ASCIT Teaching Award 2019
 UW CSE ACM Teaching Award 2018
 UW CSE ACM Teaching Award 2017
 Alan J. Perlis Undergraduate Student Teaching Award 2012
 Honorable Mention for CRA Outstanding Undergraduate Award 2012

PROFESSIONAL SERVICE	CCSC:SW Program Committee Member SIGCSE Organizing Committee Member	2019 2018-2023
INSTITUTE SERVICE	Caltech Ad Hoc Committee on SETs Reform, co-chair Caltech Undergraduate Academic Standards and Honors Committee EAS Diversity, Equity, and Inclusion Committee Undergraduate House Renaming Committee CMS Diversity, Equity, and Inclusion Steering Committee Caltech Undergraduate CS Option Representative Caltech Freshman Admissions Committee Caltech Freshman Advisor CMS Computing Resources Working Group CMS Teaching Assistant Professor Hiring Committee Member of Student/Faculty Conference Committee for CS Co-designing and Leading Upper Division TA Training (UW CSE) Member of UW Evidence-based Teaching and Learning Community UW CSE ACM Student Chapter Advisor UW CSE Scholarship Committee CMU SCS CSD Teaching Assistant Advisory Committee	2022 – 2022 – 2021 – 2021 – 2021 2020 – 2020 – 2020 – 2019 – 2019 – 2019 – 2020 2018, 2020 2016 – 2018 2015 – 2018 2016 – 2018 2015 – 2018 2012 – 2014
ADVISING (PROJECTS)	<i>Archie Shahidullah</i> (2020-2021). SURF project on data structures tests for CS 2. <i>Devin Chotzen-Hartzell</i> (2020-2021). SURF project on a Java Visualizer for IntelliJ.	
ADVISING (ACADEMIC)	2021: 8 freshman advisees, 37 upperclass advisees 2020: 8 freshman advisees, 26 upperclass advisees 2019: 8 freshman advisees, 10 upperclass advisees	
ADVISING (TEACHING)	<i>Ethan Ordentlich</i> (2018–) <i>El Hovik</i> (2015–2020). (first job: Teaching Assistant Professor at Caltech) <i>Nicole Riley</i> (2015–2018) (first job: Microsoft) <i>Michael Lee</i> (2015–2018). (first job: Dropbox) <i>Evan McCarty</i> (2015–2018). (first job: Lecturer at UIC) <i>Riley Porter</i> (2015–2016). (first job: Lecturer at University of Washington)	
TEACHING (CALTECH)	CS 137: Algorithms in the Real World Instructor (<i>Fall 2018, Spring 2021</i>) 30 students This course introduces algorithms in the context of their usage in the real world. The course covers compression, advanced data structures, numerical algorithms, cryptography, computer algebra, and parallelism. The goal of the course is for students to see how to use theoretical algorithms in real-world contexts, focusing both on correctness and the nitty-gritty details and optimizations.	
	CS 2: Introduction to Programming Methods Instructor (<i>Winter 2019, Winter 2020, Winter 2021</i>) 140 – 190 students This course is “CS2” in Java at Caltech. In Winter 2019, I rebooted this course to focus more on <i>data structures</i> . It introduces students to ADTs, and we implement a variety of data structures like Binary Trees, Hash Tables, and Graphs.	
	CS 3: Introduction to Software Design Instructor (<i>Spring 2019, Spring 2020, Spring 2021</i>) 55 – 130 students	

This course is a practical introduction to designing large programs in a low-level language. Heavy emphasis is placed on documentation, testing, and software architecture. Students will work in teams in two 5-week long projects. In the first half of the course, teams will focus on testing and extensibility. In the second half of the course, teams will use POSIX APIs, as well as their own code from the first five weeks, to develop a large software deliverable. Software engineering topics covered include code reviews, testing and testability, code readability, API design, refactoring, and documentation. In Spring 2019, I rebooted this course, as it hadn't been taught in several years. The goal is to get students to (1) learn C, (2) write *good* code (rather than just code that "works"), and (3) prepare them for CS 24.

CS 24: Introduction to Computing Systems

Instructor (*Spring 2019, Fall 2019, Fall 2020*)

70 – 90 students

This course is a traditional introduction to computing systems. Various parts of the system are examined and implemented. In Fall 2019, I re-designed this course to focus more on skills all programmers need rather than skills systems programmers need.

TEACHING
(UW)

CSE 143: Computer Programming II

Instructor (*Spring 2015, Autumn 2015, Autumn 2016*)

Co-instructor (*Winter 2015*)

160 – 700 students

This course is "CS2" in Java at UW. It introduces students to ADTs, and we implement simple data structures like Linked Lists and Binary Trees. The students are *very varied*. In Autumn 2015, I taught "CSE 143X" which combines CS1 and CS2 into a single 10 week course.

CSE 390H: CSE 143 Honors Seminar

Instructor (*Autumn 2014, Winter 2015, Spring 2015, Autumn 2015*)

50 students

This is a seminar accompanying CSE 143. The only stated course goal is to get students interested in Computer Science. We discussed a wide variety of topics such as steganography, combinatorial games, esoteric programming languages, and cryptograms.

CSE 311: Foundations for Computing I

Instructor (*Spring 2016, Spring 2017*)

Co-instructor (*Autumn 2014*)

100 – 140 students, all new majors

UW CSE Students take this course in their first quarter in the major. CSE 311 combines many of the traditional introductory discrete math topics (e.g., logic, proofs, number theory, sets, relations, various types of induction) with some introductory computability material (e.g., regexps, CFGs, DFAs, NFAs, irregularity, uncomputability). I developed several online homework "autograders" for this course which I have helped other instructors integrate into their offerings.

CSE 332: Data Structures & Parallelism

Instructor (*Autumn 2015, Winter 2016, Winter 2017*)

120 – 280 students

UW CSE Students take this course in their second quarter in the major. When I first taught this course, the projects had not been changed for six years; so, I wrote new projects in which students implement all the "back-end" data structures that make a "real world" client work. This course is the first time students usually have projects that last several weeks; so, I introduced "checkpoints" in which students meet with someone on course staff in an open area to discuss aspects of the projects. To make things run smoothly, I built some tools which integrate with gitlab continuous integration to help monitor students for these checkpoints. Although I didn't teach this course in Spring 2016 or Autumn 2016, both instructors adopted my projects. In Autumn 2016, the instructor also adopted my course policies and online exercises.

TEACHING
(CMU)

15-151: Mathematical Foundations of Computer Science

Course Designer and Instructor (*Fall 2012, Fall 2013*)

100 – 140 students, all freshmen

All computer science majors at CMU take two introductory discrete math courses: one in their first semester and another in their second. The course taken in the spring is “15-251” (see below), and it is traditionally a very difficult course. I created 15-151 for CS majors to make 15-251 less overwhelming. I used programming analogies and various techniques like group work, quizzes worth no points to check their understanding, and mechanisms/techniques to increase learning. In 2011 and 2012, I taught three lectures of 15-151 on Monday, Wednesday, and Friday. In 2011, my mentor, Klaus Sutner, gave half of the lectures.

21-127: Concepts of Mathematics

Teaching Assistant (*Fall 2011*)

200 – 300 (50 in my section) students, primarily freshmen

This course is a generic introduction to discrete mathematics for various disciplines. I held recitation for 50 students twice a week, wrote my own handouts and quizzes, wrote several of the exams, graded for my entire recitation, and held 3-4 office hours every week.

15-131/98-172: Great Practical Ideas for Computer Scientists

Course Designer and Instructor (*Fall 2011*)

Co-instructor (*Fall 2012*)

100 students, all freshmen

A while back, CMU changed their introductory sequence to include additional content on verification and parallelism. After this change, students needed additional background on UNIX, bash scripting, and C debugging; so, I created 98-172, a student-taught course to fill this need. I gave lecture once a week, and held four “lab-itations” (a cross between recitation and lab) each week as well. In Fall 2013, CMU decided to make 98-172 a course in the CS department, and I helped the effort to make the necessary changes.

15-251: Great Theoretical Ideas in Computer Science

Head Teaching Assistant (*Spring 2012*)

Teaching Assistant (*Fall 2010, Spring 2011, Spring 2010*)

150 – 200 (40 in my section) students, primarily freshmen

This course is a very difficult introduction to discrete mathematics and computability theory. It covers a new topic every week, and the homework questions are traditionally time consuming. Every semester I TAed, I held a recitation for around 40 students, held at least 3-4 office hours every week, developed homework assignments and recitations, and graded. I also maintained the course submission and grading system and over many of the semesters, I developed a new one. In Spring 2012, I had several additional duties as the head teaching assistant. I acted as liaison between the other TAs and professors, and I held extra “conceptual” office hours every week in which I repeated the topics from lectures for students who were struggling. These office hours usually were attended by 20-30 students.

EDTECH
PROJECTS

As a companion to my teaching, my research consists of educational technology which I often test with user studies and other formal evaluations. Many undergraduate students have contributed time and energy to several of these projects.

Java Data Structure Visualizer

2016 – 2018

I developed two Eclipse plug-ins: EZClipse and Viz. EZClipse makes the eclipse user interface more friendly to beginners. Viz provides a “logical visualization” of various features of Java programs during debugging. In particular, it helps students visualize data structures, stack traces, and fields.

Induction Practice Interface

2015 – 2018

Some students and I developed an interface (and checker) for simple induction problems. We are working on extending it and using it in an introductory discrete math course for practice and homework problems.

Online HW Problems Framework

2014 – Current

I have written online interfaces for various problems (“construct a DFA”, “insert into this AVL tree”, etc.) in introductory discrete math and data structures courses to (1) encourage students to make multiple attempts on a problem, and (2) speed up grading. These interfaces give minimal (but useful) feedback, and the students are given a fixed number of attempts for each problem. I am working on expanding and improving as many of these interfaces as possible for various courses. They are being used by multiple instructors in both CSE 311 and CSE 332 at UW.

A compiler for introductory discrete mathematics

2012 – 2014

I designed a programming language called “Setty” and implemented a compiler. The standard library builds naturals, pairs, etc. from sets using the standard mathematical constructions. The goal of this language (which we used in 15-151) was to allow students to learn “the mathematical language” such as set comprehensions like $\{x \in [5] \mid x > 2\}$ and quantified statements like $\forall(x \in [5]). x < 5$ by evaluating them in a computational environment.

Improving submission, annotation, review, and feedback of proofs

2010 – 2015

I developed a course infrastructure system that handles LaTeX submissions, annotation, grading, and feedback of proofs. The system allows graders to first review and mark up the student submissions while re-using comments without worrying about point values, and then apply a rubric to their reviews. By providing an interface to easily reuse comments and update the rubric globally with a single click, we reduce the grading time while increasing the usefulness of feedback.

Peer grading of proofs

2010 – 2014

The system we developed for submission and feedback also allowed students to anonymously review each other’s submissions. I ran a study which showed that students who *reviewed* more proofs rather than *doing* more proofs wrote better proofs later.

CONFERENCE
ABSTRACTS

Panels (Panelist)

Blank, Adam (Moderator), C. Alvarado, D. Garcia, and Z. Dodds. “Undergraduate Course Assistant Autonomy in Course Development and Teaching”. In: *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2*. SIGCSE 2022. Providence, RI, USA: Association for Computing Machinery, 2022, pp. 1065–1066. ISBN: 9781450390712. DOI: 10.1145/3478432.3499224. URL: <https://doi.org/10.1145/3478432.3499224>.

K. Walther, **Blank, Adam (Moderator)**, M. Ball, and S. Rampure. “A New Class of Teaching-Track Faculty: No Ph.D. Required”. In: *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2*. SIGCSE 2022. Providence, RI, USA: Association for Computing Machinery, 2022, pp. 1029–1030. ISBN: 9781450390712. DOI: 10.1145/3478432.3499227. URL: <https://doi.org/10.1145/3478432.3499227>.

M. Ball, A. DeOrio, J. Hsia, and **Blank, Adam**. “Teaching TAs to Teach: Strategies for TA Training”. In: *Proceedings of the 52nd ACM Technical Symposium on Computer Science Education*. SIGCSE '21. Virtual Event, USA: Association for Computing Machinery, 2021, pp. 461–462. ISBN: 9781450380621. DOI: 10.1145/3408877.3432579. URL: <https://doi.org/10.1145/3408877.3432579>.

D. Garcia, I. Bezakova, **Blank, Adam**, and N. Terrell. “Teaching Computer Science with Abstract Strategy Games”. In: *Proceedings of the 52nd ACM Technical Symposium on Computer Science Education*. SIGCSE '21. Virtual Event, USA: Association for Computing Machinery, 2021, pp. 1232–1233. ISBN: 9781450380621. DOI: 10.1145/3408877.3432572. URL: <https://doi.org/10.1145/3408877.3432572>.

J. Akullian, **Blank, Adam**, L. Bricker, L. DuHadway, and C. Murphy. "Supporting Mental Health in Computer Science Students and Professionals". In: *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*. SIGCSE '20. Portland, OR, USA: Association for Computing Machinery, 2020, pp. 958–959. ISBN: 9781450367936. DOI: 10.1145/3328778.3366980. URL: <https://doi.org/10.1145/3328778.3366980>.

M. Ball, J. Hsia, H. Pon-Barry, A. DeOrio, and **Blank, Adam**. "Teaching TAs To Teach: Strategies for TA Training". In: *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*. SIGCSE '20. Portland, OR, USA: Association for Computing Machinery, 2020, pp. 477–478. ISBN: 9781450367936. DOI: 10.1145/3328778.3366987. URL: <https://doi.org/10.1145/3328778.3366987>.

Birds of a Feather (Organizer)

J. Akullian, **Blank, Adam**, B. Blaser, E. Garza, C. Murphy, and K. Walther. "Diversity Includes Disability Includes Mental Illness: Expanding the Scope of DEI Efforts in Computer Science". In: *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2*. SIGCSE 2022. Providence, RI, USA: Association for Computing Machinery, 2022, p. 1190. ISBN: 9781450390712. DOI: 10.1145/3478432.3499183. URL: <https://doi.org/10.1145/3478432.3499183>.

J. Akullian, **Blank, Adam**, B. Blaser, and C. Murphy. "Supporting Computer Science Student Mental Health through Unprecedented Times". In: *Proceedings of the 52nd ACM Technical Symposium on Computer Science Education*. SIGCSE '21. Virtual Event, USA: Association for Computing Machinery, 2021, p. 1357. ISBN: 9781450380621. DOI: 10.1145/3408877.3439519. URL: <https://doi.org/10.1145/3408877.3439519>.

Special Session (Organizer)

J. Payton, **Blank, Adam**, C. Murphy, M. Hovik, K. Lin, A. Kwon, and L. McConnaughey. "Perspectives on Allyship in Academia". In: *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*. SIGCSE '20. Portland, OR, USA: Association for Computing Machinery, 2020, pp. 1262–1263. ISBN: 9781450367936. DOI: 10.1145/3328778.3366997. URL: <https://doi.org/10.1145/3328778.3366997>.