Students' Letter of Recommendation

November 10, 2021

1 Introduction

This is a compilation of letters of recommendation from students I taught during my last two and a half years at UCSC. I originally created this as part of my application for the Rhodes Scholarship in the Fall of 2019. This version is for my PhD applications in the Fall of 2021. For this I reached back out to the students, asking for further permission to once again share their writing.

There is no clear order to the letters. I tried to group them by similarity, to have some vague sense of narrative helping them flow together, and to open and close with letters that I think best make the case for what I bring to a community. I wouldn't blame you if you choose not to read them all. If that is your choice, I'd most strongly recommend reading the first three.

Yours, Matthew Gray

2 Nicholas Shekelle

It is not often that I wish a university course would continue after it's completion. The student run seminar Matthew taught was one of those rare exceptions. I learned more relevant information in that class than any other computer science course I have taken at UCSC.

Matthew's teaching style and attention to detail is phenomenal. He made sure every student understood the material before moving forward and lectured enthusiastically. He is very approachable and friendly which made students feel comfortable asking questions. Matthew's ability to break down complex problems into simpler subproblems makes him an effective teacher that delivers results. He has a unique ability to make even the driest of topics interesting by approaching them with energy and creativity.

Matthew's seminar propelled me into an internship and a future career in cybersecurity. He and his fellow student teachers sparked a curiosity in math-heavy software engineering which will carry me throughout my professional career.

Nicholas Shekelle: Now Software Engineer at Meta

3 Alex Cooper

I often joke that Matthew was born with a pocket journal and a pencil in his hands. Of all the quirks and the stories we tell about him, and in the four year that I have learned and grown with him, magic is contained between those pages. It is from these small pages that Matthew can convey the most complicated ideas, technical or otherwise, and get the most out of someone. It is where he really begins to share his deepest wisdom, and where he brings everybody at some point to learn from him.

Needless to say, as a queer black woman from East Oakland, I did not exactly find my place easily amongst my peers or professors. Much of my time during my undergraduate career was spent squeezing my way into restricted spaces and gnawing at any opportunity, hoping for a sliver of recognition or respect; however, I received nothing more than doors slammed shut before I could

enter the room. These experiences made their way into the discussions I would have with Matthew when I later grew to know him more and live with him.

I would be a hurricane of emotions pacing about the tiny living room Matthew and I shared with ten other people where we would occasionally convene to talk about life, computer science, and everything between. Between fury and despair, my recounting of sexual harassment and racist remarks flung by professors and peers alike, Matthew took notice and reached out to me. He took these struggles — these acts of violence — to heart and really put time into listening to me and worked to understand why these issues were of paramount importance. Matthew knew that this was vital to be aware of and apply to the spaces he intended to be in, so he put these to work into the classroom.

There is a difference between explaining and teaching. Explaining is mechanical. There is a wall between the explainer and the listener that is never me. In these situations I sit and swallow a prayer that something will click. Then, there is teaching. Matthew knows how to teach. He will often take note of who did and who did not understand. Who did and did not get the chance to contribute. Who did and did not get shut out of the conversation. These barriers Matthew is able to tear down and introduce someone like me into the space. Someone who did not get to understand, someone who did not get to contribute, and someone who did get shut out of the conversation. He helped me with the questions from classes I was taking, introduced me to faculty at the university, and led me into the student-led seminar he created. These opportunities boosted my chances at moving forward in the daunting field that computer science is. Now, I am working with a welcoming professor that Matthew recommended me to, and have a door finally opened.

I greatly appreciate the work Matthew has done to make me, and many others, feel less excluded in the engineering field. Also, I hope that he will be able to continue this work in the future. Speaking from first hand experience, we need more people like him in the field ensuring that people like me are included, and allowed to participate and learn with everyone. Matthew has made a lasting impact on the engineering department we were a part of. Without him, I would have left computer science. He helped break down the barriers and create an environment that me and many others were previously held back by. From this newly created space came the opportunities and experiences that we needed to be successful and feel safe to pursue our goals.

Alex Cooper: Now Associate Build Engineer at Respawn Entertainment

4   Eric Vin

In the short time I have known Matthew Gray, he has proven time and time again to be a positive and enriching presence in my life as a teacher, a mentor, and above all else, as a friend. I met Matthew when he and a few other undergraduates at UCSC taught a seminar on Computer Science. Before the start of the class, he sent an email to everybody in the class he was currently a TA for stating, "Come for math, come for chocolate, come to get better at proofs and to see what proofs can do, and come to join a community of people excited about the possibilities of mathematic CS". I can think of no better way to encapsulate the attitude that Matthew came into the classroom with every day. I can't recall a single time I spoke to him that he wasn't absolutely filled with excitement and passion about the material he was studying, and the prospect of sharing that material with the students who were as excited about it as he was.

When Matthew taught our class, I immediately felt as if I was his peer, not his student. Anyone in the classroom could immediately tell how thrilled he was to be up at the board, talking about math and computer science and that energy made us all the more excited. Before this, I had considered math as something that I needed to learn to pursue engineering, really nothing more than a box to check on my transcript before I could get to the fun stuff, but Matthew's passion for math was so infectious it literally inspired me to pursue a second degree, this time in mathematics. I've always felt that the best type of teacher is one who teaches because they love sharing knowledge

with others, and because of that I can say without a doubt that Matthew is the best teacher I've had at UCSC.

Beyond being an excellent teacher, Matthew was more than happy to act as a mentor to me. He encouraged me to network with professors, reach out to labs, and pursue my goals in a daunting university setting. His encouragement and guidance, along with that of the other seminar instructors, gave me the opportunity to do research in a lab on campus and work with computer science professors. These are all opportunities that I doubt I would have had the motivation or foresight to pursue without his guidance, and they have greatly enriched my educational experience at UCSC.

While I am deeply thankful for all of the things Matthew has done for me, I am most grateful for his friendship. The best example I can give of this is my first section of CE12, a class that both Matthew and I were taking in the same quarter that he was teaching the seminar. We were sitting next to each other chatting, and I brought up how I was having difficulty with a certain concept he had discussed in class the previous day. Without a moments hesitation he broke out a note pad and started breaking it down for me, even though he had a lab due. He cleared up the concept and after class while we were both waiting for the bus he told me stories about his undergraduate experience, gave me advice, and joked around. It was clear that he truly wanted the best for me, and I know without a doubt that he felt that way about all his students. It's hard to convey just how much my time with Matthew affected me, but suffice to say it completely changed my college career for the better, and for that I will always be grateful.

Sincerely, Eric Vin: Now PhD Student at UCSC

5   Keerthana Routhu

"If you had a scale and nine identical balls, where one ball had a different weight than the other eight balls, what is the least number of times you have to use the scale to figure out which ball is different?" It's three. This is a very, very common engineering interview question. In fact, if you search for common computer science interview questions, this one will probably be on the list. "What about ten identical balls? How many times do you have to use the scale?"

I consider myself lucky because I got the chance to learn from Matthew. Matthew was one of the instructors for a number theory and cryptography seminar that I took at UC Santa Cruz, and this is where I first met him. Initially, I was not part of the class, and did not intend on taking the class either. Despite this, I sat in on one of the classes and found myself feeling more engaged than I had felt in any of my other classes. So later that day, I enrolled in that class. Honestly, this was probably one of the best decisions I made in college. Matthew helped me understand that I was passionate about math, and I learned that I could do so much more by learning more math.

I felt challenged, but also comfortable to ask questions. I learned about multiple new things in a fast-paced environment, but also learned about these concepts in enough depth to have a solid understanding about them. The class itself was a pass/no pass class, and most students generally take these classes for the units rather than for the material. However, most, if not all, of the students I met in that class were excited about coming to class and learning every single day. I can confidently say that this is because of the enthusiasm and passion that Matthew and the other instructors had for the material in the class.

Matthew genuinely cared that his students understood the material and made himself available both in and outside of class time and office hours. I was someone who never went to my professors' office hours because I either did not feel comfortable enough to ask for more information or I was not interested enough in the class to want to learn more. This was the first class where I actually went to office hours, asked questions, and learned more. Because of the environment Matthew and the other instructors set for the class, I went to office hours consistently, and so did many of the other students.

There was this one time where one of my classmates and I were really interested in a puzzle presented to us in class. The puzzle in class was a variation of the puzzle the interviewer asked me – instead of the usual nine balls, this puzzle had twelve. We wanted the explanation, so we went to office hours, but could not stay the entire time. Matthew reached out to us, asked us if we were interested in setting up a time to meet outside of office hours, and made sure to again, challenge us and teach us something completely mind-blowing.

He introduced us to hypothesis spaces and how to break up sets to get the most information with as little work as possible. My classmate and I slowly worked through the problem and Matthew guided us through it, giving us just enough information to get past the point we were stuck at, but never enough information to give the answer away.

When my interviewer asked me how many times I had to use a scale for ten balls, I immediately knew the answer. Three, I told him the answer and I knew I was right. The interviewer was not convinced. So, I went ahead and explained everything Matthew taught me months before about hypothesis spaces to a forty-five year old man who had been working in industry for over twenty years.

A month later, I got the job.

The interviewer liked that I could explain hypothesis spaces, and remained confident about my answer, even when the interviewer was not. If I did not feel comfortable enough to attend office hours, I would have stumbled on the interviewer's variation of the question, and if I did not take Matthew's class, it would have taken me a much longer time to figure out what I was passionate about.

Keerthana Routhu: Now Software Engineer at Truveta

6   Matthew Rhea

I was given the unique perspective of being a student of and co-instructor with Matthew Gray in my time of knowing him. In both settings, Matthew showed empathy, compassion, and a deep desire to instill a fervent excitement for what he teaches.

As a student of his, he broke down complicated concepts and problems into understandable and approachable parts. He expressed an excitement about what he teaches unlike any teacher I have seen for similar subjects. As a co-instructor, I witnessed his methodology and passion for teaching. I got a glance into the amount of effort, planning, and learning he instills into his work. Out of the teaching staff we collaborated with, Matthew was the most determined to ensure all students had a full understanding of what was being taught. These experiences have contributed to me considering him somebody who best exemplifies the qualities of a teacher.

Having been a friend of Matthew's for four years, I also witnessed his transformation into the commendable person he is today. He is somebody who is constantly improving. Whether it be technical or soft skills, Matthew grew more than everybody I knew. This improvement in soft skills, I believe, is a quality that rubs off onto his teaching credibility in a particularly important way. That way being that Matthew ensures all students feel as safe, comfortable, and confident as possible. He takes into account their differences of skill and background and empowers them to be the best they can be. This quality of inclusivity he practices is unfortunately neglected by many other teachers.

It is for these reasons I believe Matthew deserves the recognition I, and many others, give him. He is inclusive, empathetic, warmhearted, and has an intrinsic desire to help others understand complicated subjects in such a way that few others can emulate.

Matthew Rhea: Now Software Engineer at Tonzy

7   Oskar Hernandez

It is my pleasure to write this letter of recommendation for Matthew Gray, whom I have known for the past four years.

From when I would come in for help in my Data Structures course, Matthew has demonstrated fine qualities that make him an excellent teacher and mentor. As an aspiring software engineer and computer science student, I have had the pleasure of having Matthew as a tutor for multiple classes, which have allowed me the opportunity to see his outstanding abilities in teaching complicated subjects. In the Computer Lab, I have seen him work closely with students to help them grasp everything from linked lists to bloom filters. It was clear he would spend personal time preparing mini lectures to deliver to students before all his tutoring sections. His presentation showed not only mastery of the various course materials, but a great ability to communicate the complicated content to those who had never seen it before. He would draw pictures on the white board to help students who were more visually inclined, and also incorporated anecdotes and analogies to keep others engaged. I have always been impressed with the level of confidence and enthusiasm Matthew demonstrates in an instructor position. So much so, that I opted to enroll in an independent study course on collection of unconventional but interesting computer science topics, led by him and a few other students. Here, he demonstrated a great command of the classroom and creativity on designing the assignments. The most memorable would be a Harry Potter themed blog post he had me write on range encoding.

I also know for a fact that Matthew is a competent, flexible, and very creative teacher and mentor. I have noticed how he enthusiastically takes responsibility for the success of his students and how he loves to engage with complex topics. From the various settings I've worked with him, I have seen that he has always had a good rapport with his students. He's very outgoing and personable, which makes students feel comfortable to engage with him and the material. There was never a dull discussion under Matthew's independent study course. The assignments and topics I covered under his teaching felt rewarding and important. Although I transferred Universities, Matthew kept in contact with me offering his mentorship in both my educational and personal endeavours.

I believe that Matthew has demonstrated the knowledge, skills, qualifications, and most importantly, that innate ability of an outstanding teacher/mentor. I consider myself lucky to have learned under him for many years. I strongly recommend him, knowing that he will be a valuable asset to any school.

Sincerely,
Oskar Hernandez: Now Software Development Engineer at Zoom

8   Aaron Swoiskin

I am writing this letter of recommendation for Matthew Gray for your Computer Science PhD program. I had the pleasure of being one of Matthew's students for his class Computer Science 42a: Survey of Applied Computational Science, as well as having him as a teaching assistant for Computer Science 101: Abstract Data Types.

In both of my experiences having Matthew as a teacher, he has shown nothing but enthusiasm for both his role as a teacher and his subject matter, and brings boundless positivity to every class. When I think back to his lectures, I can't help but picture the smile that he wore into the classroom and kept on the entire time. It helped ease the tension of learning difficult math concepts by keeping things lighthearted and fun. He also liked to use creative ways of exploring

new topics, like using riddles to introduce concepts, to keep this mentality throughout the course.

Matthew is always ready and willing to help a student in need, especially when they are as passionate about computer science and math as he is. After my first discussion section with him as my teaching assistant, I could tell he truly cared about the topics, and decided to ask for his recommendations of just-for-fun math resources. He gave me a long list of books to read, classes I might enjoy, and professors that similarly cater to students who enjoy math for the fun of it, as well as general life advice for pursuing math.

I am happy to recommend Matthew for your Computer Science PhD program. Please contact me for any further questions.

Sincerely, Aaron Swoiskin: Now 4th Year Computer Science Major UCSC

9 Art Parkeenvincha

When I think back about the person who inspired me to teach for almost the entirety of my undergraduate career, it would be Matthew Gray.

His love for teaching is best demonstrated when he took the initiative to set up his own class about computer science. His goal was simple – to teach computer science topics normally too difficult for undergraduate students. Not only did he accomplish this, but the inspiration he rallied caused many students to also do the same – culminating in student after student teaching their own topics at the end of the quarter. He sparks the fire for curiosity in all students – students such as myself who want to give back to the community, as much as Matthew gave to ours.

Art Parkeenvincha: Now Software Engineer at Cerner Corporation

10 Disha Mevada

I first met Matthew in my algorithms course, which he was a teacher's assistant for. From the first day, Matthew's dedication shone greatly. Whenever I sought help from him, he ensured that I fully understood the topics I had questions on through the use of personalized examples that still continue to benefit me to this day.

The following quarter, Matthew was one of the instructors for my applied computational science seminar, which easily became my all-time favorite class. Matthew's passionate lectures and excitement towards the subject greatly helped me build an interest in theoretical computer science. This class became the class that I most looked forward to everyday and the concepts that I learned from Matthew helped me in other classes as well.

Matthew serves as an inspiration to me and I cannot imagine a more perfect person for this program.

Sincerely, Disha Mevada: Now Software Engineer at Fanatics, Inc

11 Zach Schmitt

"Go home and learn the material for the quiz next class" is often a phrase that raises the blood pressure of most college students even though it is heard weekly. Regardless of whether this is an agreed upon teaching strategy, I had to actually learn on my own for once. It was in CS 101 where the values of this process came clear to me. I would spend hours going over algorithm that would make calculus feel like a walk in the park. There was simply not enough class time to learn everything from the professor so students had to learn on their own. That is where I met Mathew

Gray who not only guided me throughout the class, but for the next two quarters. Matthew was a TA for the class, while he wasn't a graduate student everyone called him a TA because he enjoyed coming into the class to help. For the first few weeks I wouldn't go to Matthew's sections, but then I decided to go to his midterm review. Most TA's would simply go over materials given by the professor, but Mathew went out of his way to provide useful examples that nobody there had thought to study. He would allow the students to work on the problem for some time, making his way around the room to check if we were on the right path, never giving up too much information yet guiding us to our own solutions. Matthew took this same approach with his final review which led to me getting a 100

When I was in Matthew's final review he had asked if any of the students wanted to take his student directed seminar the following quarter about different topics such as encryption, compression, and an assortment of CS topics not normally taught by the school. It was in that class that Matthew's talents shined. This seminar was made and taught by 5 undergrad students who all shared unique passions within the field and is to date, my favorite class I have taken at UCSC. The structure involved one of the teachers spending two weeks on a topic and the students would each prepare a project based on that topic. As undergraduates, standing in front of a class and delivering a full lecture was a daunting task, so generally Matthew would assist the other students with their lectures. This is where Matthew set himself apart from every other student I have met. The topics covered in this class were ambitious to say the least; most of them involved higher level math than almost all of the students had never seen before. The teachers would try their hardest to explain the theories, but in reality we (the students) were just waiting for Matthew to pick up the chalk and deliver one of the 'Oh Shit' moments we were always waiting for.

Countless times did Matthew deliver that to the class. His way of explaining modular arithmetic, arithmetic encoding, and all of the topics in between hooked me. Soon I would be attending all of the classes and all of the office hours because the stuff I was learning was that cool. In the office hours I attended every week Matthew would go over advanced topics and extra projects in a small group setting which led to a tightly knit group who enjoyed teaching one another random material we had picked up throughout our years in school. The amazing thing is that Matthew had put it all together. He had gone through the school to make the class happen, he did the paperwork, committed to planning the class, and most importantly he got 30 computer science majors to create some of the most interesting projects I've done. Matthew did this all for the students and because he wished he had an opportunity to take the class he was teaching.

Overall, Matthew is a mentor, a leader, and most of all, an intellect. I cannot fathom what goes on behind Matthew's eye, but I believe this is what makes him such a great mentor. Matthew's charisma coupled with his ability to visualize unique solutions to complex problems leads him to be the smartest yet most approachable person in any room. Matthew is someone who is an asset to any team.

Zach Schmitt: Now Software Engineer at General Motors

12   Manthan Mallikarjun

Last year I was looking for an extra CS class to take and saw that CMPS 42A was open. I was really hesitant to take the class but in retrospect I am glad I did because it is the class that has prepared me for the real world in unspeakable ways. Matthew Gray somehow managed to fill in the gap that college left, because while we learn data structures and basic programming in lectures, he taught us the practical applications of what we learned. I've never been more interested in doing a homework assignment than in 42A because they were interesting and challenging enough to make me say "I know I can" instead of "I give up."

Matthew is an excellent teacher, mentor and friend. His lectures were very straight forward and clear. He didn't need a cheat sheet or look up stuff while lecturing; it was clear that he

understood what he was teaching at a very deep level as if he was teaching this material all his life. His leadership skills were very apparent as the entire class viewed him as a friend not a superior. He made himself approachable and was willing to stay after class for as long as you needed until you understood the material.

What set Matthew apart from the rest of the teachers and mentors in my life was the stuff he was willing to do outside of what he was required to do. I was programming for fun on one of my side projects and hit a hurdle that had to do with encryption. I tried looking around couldn't find the solution. I sent an email to Matthew asking for some help fully expecting him to just reply with a link or two on how to do it. Nope... He said that we should meet so he could not only tell me what to use but also how it works under the hood. I set aside 15 minutes so he could show me how it is all done in person. That 15 minutes ended up turning into a 3 hour long discussion that not only went into encryption, but also into research, education, programming languages, and more. I left with so much more knowledge and understanding than I expected to and furthermore apply what he taught successfully.

Never have I met someone who could simultaneously teach me, mentor me, hang out with me, and instill this level of trust all at the same time. I hope Matthew is selected because he truly deserves it.

Manthan Mallikarjun: Now Software Engineer at Twingate

13   Evan West

In the few years I have known Matthew he has been my mentor, teacher, colleague, and friend. My time at UC Santa Cruz has changed me dramatically, and Matthew was instrumental to many instances of positive growth.

My freshman year at UCSC was marked by a number of struggles, one of which was academic achievement. In the spring of that year I took Introduction to Datastructures, a class which Matthew was tutoring. Matthew and I were already acquaintances at this time, so I knew he was involved with a research lab, had a summer internship, and was close with a number of professors on campus. These achievements seemed beyond what I would achieve at UCSC. Yet, Matthew was down to earth and authentically wanted everyone around him to achieve the success he had. Matthew's sincere belief that my fellow students and I were equally as capable planted an idea in me. Matthew made me realize that my life could be as impactful and meaningful as I wanted, I just needed to start working much harder.

That revelation lead to a complete change in my work ethic. I ended up barely passing Introduction to Data Structures, but that was the last C of my college career. I looked up to Matthew at that time. He was accessible, friendly, and showed me a path towards achievement. This was never stated explicitly. He simply lead by example with an eye to the success of others.

Following this interaction, I took an independent study course which Matthew ran and then taught a Student Directed Seminar alongside him. Matthew and I became friends, I got involved in research labs on campus, and began interning at Sandia National Laboratories. In February of this year Matthew and I created and lead a political movement within the engineering department in response to faculty misconduct. We were equals working towards a common goal with low odds of success.

Matthew's excitement and dedication were infectious. I threw myself into this work more than anything else I have ever done. I read policy, wrote public statements, and had meetings with administrators at UCSC I never imagined I would meet, much less argue with. We brought public awareness to the issue and catalysed real action by the University. This was another experience which had a high impact on who I am. However, I was initially hesitant to take action. Yet there

were people who I knew would refuse to do nothing in the face of blatant injustice and they inspired me to act. Matthew was one of these people.

I have not detailed all the positive traits I know Matthew to have. Instead I, perhaps selfishly, focused on my own experience. This was intentional. Matthew is kind, hardworking, honorable, intelligent, and more, but I don't believe these traits best indicate one's quality. Instead I prioritize how they impact the people around them. Matthew has been a positive force in my life and the lives of many others. I know he will continue to inspire, lead, have great collaborations with, and advocate for others. That is the highest praise I can give.

Evan West: Now PhD student at Stony Brook University