

## 1 Motivation

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The generation, preservation, and transfer of knowledge is a defining characteristic of the human tradition. Thus, I believe actively participating in the educational process fulfills a deeply-rooted purpose of our society and provides meaningful context for my life. On an individual level, seeing students master new concepts is greatly satisfying, and teaching improves both my ability to disseminate scholarship as well as my own mastery of subjects. I am thrilled when students ask questions that cause me to think about topics in new ways, and I particularly enjoy getting to work closely with students to mentor them and help them reach their goals. Moreover, education in a field like computing or mathematics can benefit students of all backgrounds and can in turn broadly improve society, e.g. graph theory used by engineers to keep social media safe or physics simulations used to develop efficient automobiles. The radius of the indirect impact of quality education is immense, and I consider it a tremendous honor, privilege, and joy to participate in this central element of the human project.

## 2 Teaching Style

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Three words that summarize my teaching style are empathy, joy, and discovery.

Empathy for me means being able to put myself in students' shoes, to understand their perspectives and questions, and to imagine what would make learning experiences more enjoyable and impactful for them. For example, I clearly remember when I first learned about Fourier transformations—I recall how I played with the mathematics and used computational demos to build my own intuition as well as gain a solid grasp of the analysis. Thus, when I lectured on Fourier analysis to a graduate course at Stanford, I took a “naïve” approach that mimicked my own learning process: Why do we want to know about Fourier analysis? Where do these techniques come from? What intuition is there for such theory? How do we use this in practice? By explicitly investigating questions like these in addition to the standard presentation of the theory, I believe students can more easily learn and retain the material because I teach using multiple modalities (auditory, visual, kinesthetic) and try to replicate actual learning processes in the classroom. The whole idea is to think about what would make the lecture as useful and accessible as possible to each of my students.

Empathizing with students is closely related to joy and discovery in my teaching; if I can give students a sense of wonder or epiphany while also making lectures fun and entertaining, then I believe I will have done much toward becoming a successful educator. For instance, when I lecture on Fourier transformations, I always use my guitar to demonstrate fundamental frequencies and harmonics, which I visually analyze in real-time using code on my laptop. In another case, when I taught an undergraduate computer graphics course, I arranged a class field trip to a local video game company; since many students became computer scientists because of video games, seeing in person how the skills I was teaching them transferred to creating video games was personally significant for the students. Also, in several of my computer graphics lectures, I took frames from beloved animated movies and explained what graphics techniques were used to create each scene, which provided great motivation for the

concepts and also gave greater appreciation of the mathematics of CGI films. There are simple things, too, which I've seen significantly increase my students' happiness—like bringing donuts to their final presentations after a few stressful weeks of everyone working on their term projects! I believe that sincerely caring for students' success and maximizing enjoyment and inspiration in courses while still rigorously covering material is a successful style of teaching.

### 3 Commitment to Pedagogy

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A numerical analysis course taught today is quite likely different than the same course taught five years ago (one must address applications in data science, deep learning, etc.), and certainly twenty or even fifty years ago. Great instruction requires adaptation. During my Ph.D., I served as a Mentor in Teaching Fellow and Liaison for the Vice Provost for Teaching and Learning, both roles which allowed me to learn the latest pedagogical advancements and implement them in my classes. I am committed to continuing to refine and adapt my teaching throughout my career, especially as technology and society continue to evolve. As a concrete example, I hope to present a paper on education in computer graphics and computational science at an upcoming conference (likely the Workshop on Teaching Computational Science). I will actively seek out opportunities similar to what I found in graduate school at my future institutions, and I look forward to learning from the wisdom of my future colleagues.

### 4 Teaching Experience and Awards

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During my Ph.D., I comfortably exceeded the requirement of TAing two courses. In my postdoctoral role at UCLA, I have advanced even further and have not only taught but redesigned courses almost every quarter.

| Quarter     | Course   | Role       | # Students |
|-------------|--|------------|------------|
| Fall 2020   | COMPTNG 20A: Principles of Java Language with Applications         | Instructor | 30 (est.)  |
| Spring 2020 | COMPTNG 20A: Principles of Java Language with Applications         | Instructor | 56         |
| Fall 2019   | COMPTNG 10A: Introduction to Programming                           | Instructor | 81         |
| Fall 2017   | CS148: Introduction to Computer Graphics and Imaging               | Head TA    | 168        |
| Summer 2017 | CS148: Introduction to Computer Graphics and Imaging               | Instructor | 56         |
| Fall 2016   | CS148: Introduction to Computer Graphics and Imaging               | TA         | 123        |
| Summer 2016 | CS148: Introduction to Computer Graphics and Imaging               | Head TA    | 84         |
| Spring 2016 | MS&E 476: Entrepreneurship Through the Lens of Venture Capital     | TA         | 34         |
| Fall 2015   | CS448J: Concepts and Algorithms of Scientific and Visual Computing | TA         | 3          |
| Spring 2015 | CS205A: Mathematical Methods for Robotics, Vision, and Graphics    | TA         | 104        |

Additionally, I have designed and taught special topics seminars for middle and high schoolers through the Stanford Splash program. These include “Knot Theory: da Vinci & Math,” “The Pigeonhole Principle & Its Applications,” “Math: Prove It!,” “Exotic Plants: A Brief Tour,” and “Physics & Computation.” Furthermore, as an undergraduate, I greatly enjoyed the experience of helping lead UCSB's Math Circle for local high schoolers, which involved weekly lectures and problem sessions.

My roles in courses at Stanford led me to receiving an Outstanding TA bonus from the Computer Science department as well as the Ph.D. Distinction in Teaching. My

teaching experience also contributed to earning the Gerald J. Lieberman Fellowship for outstanding research, teaching, and service.

Of note, I have achieved perfect scores (median 9/9) for the courses I have taught online at UCLA during the pandemic. Having had years of experience taking on-line courses throughout my own career, I am uniquely qualified to provide excellent, engaging, personalized instruction through this modality.

## 5 Courses Prepared to Teach

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- Computer Graphics
- Scientific Computing
- Numerical Analysis
- Machine/Deep Learning
- Numerical ODEs/PDEs
- Computational Fluid Dynamics
- Introductory Data Science
- Lower-division math
- Entrepreneurship/Startups
- Any undergraduate CS course

## 6 Select Student Feedback

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The following are unedited quotes from various course feedback surveys from my time at Stanford and UCLA. Having many wonderful students has made my job easy!

- AMAZING professor, best Pic prof I've ever had and one of the best Math professors I've ever had. So nice and welcoming, I always felt comfortable asking questions and he was super helpful and down to earth. I can tell he really cares about his students and hopefully I have more classes with him in the future!
- He's a phenomenal teacher. Encouraging, thorough, engaging. I would recommend him to a friend. He's one of the nicest professors I've had.
- Professor Hyde is a wonderful professor who truly cares about his student's learning. He is the only professor out of 4 that I've had this quarter that made the switch to remote learning a breeze. He is super kind and understanding of stupid questions and really gets that everyone's learning at a different pace.
- Professor David is the best professor I ever met. He is pretty patient with all my questions. He is super willing to make his explanation to the clearest when I asked him to repeat some of them after class. And he replies my email immediately.
- Learned a lot about Maya, but also David was a crucial part to helping us finish our final project. Would not have been able to do it without the emergency office hours he helped us with at the very last minute, and his constant presence

via Piazza. You can tell that he truly cares about the students and it's awesome to have so much support.

- I came into the course with zero knowledge about graphics and now feel like I could tackle almost any new aspect about computer graphics. The course was incredibly well designed and covered a very large diversity of items, including OpenGL, real time graphics, ray tracing, VR and CUDA. I felt like spending a small amount of time on a variety of topics really allowed me to broaden my knowledge on all areas so that I could gain the fundamentals of each one. David's design of this course was really thorough and highly recommended for future implementations of the course for other students.
- David is a very easy going guy and very approachable. "Cool" is one of his sayings and it really puts a new student at ease when trying to confront any technical issue.
- Very familiar with the whole course & codebase - whenever we get into trouble in work, he can immediately point out what could go wrong. Very helpful.
- Pretty good introduction to computer graphics; David Hyde is both an excellent instructor and a thoughtful person, which is rare to find these days. The support that he provided via Piazza and his willingness to ensure that students understood concepts really made this course great to take.
- You can tell David is excited about the subject which gives him the power to convey his ideas clear and easy.
- Take this with David Hyde if you can, or at least an instructor who has a similar syllabus and design of the class as he does. In previous CS148 courses, you only focus on raytracing, but David chose to create a completely different course which included OpenGL, CUDA, real time graphics, raytracing, AR/VR, and an open ended final project. Each week or so covered a different topic, which was great since you could learn the fundamentals for each thing and then pick a final project to focus more deeply on one of the topics. While I think ray tracing is cool and a valuable skill, I could not imagine an entire class focused only on ray tracing, and in fact, found real time rendering to be the most rewarding section of the course personally (and ray tracing to almost be the least interesting). David was also very dedicated to his students and cared a lot about teaching us the material and was an excellent instructor. I felt very lucky to have been able to take the course with him and with his course design.
- I learned that some TA's actually do care about their students learning and aren't just TA ing for a resume booster.
- I had a great time taking this course and I learned a ton. David very clearly communicated all of the concepts we talked about in lecture, and he was quick to answer any questions on Piazza, outside of class, or in office hours in a

thorough way. His enthusiasm for graphics is infectious, and I ended up leaving the quarter far more interested than I had expected in pursuing graphics further. David, thanks for a great quarter!

- David is an excellent instructor and should be offered more classes to teach. He showed an incredible dedication to his students and was patient and highly effective in his instruction. Furthermore, he cared a lot about giving his students a wide variety of exposure to different parts of graphics, including having a guest speaker for Virtual Reality, and even took the class on a field trip to the tech company Electronic Arts to see where graphics programming happens in the real world. He made sure that we were given all the necessary materials for succeeding in the assignments and really went out of his way to help us if we struggled on either parts of the HW that we did not fully understand or issues with our final projects. I would highly recommend both David as an instructor and also his philosophy and syllabus/course design of this course, since it was really well done and I learned a lot more than I thought I would coming into the class.
- Clone him.