

TEACHING STATEMENT

Pedagogical Philosophy

Van Doren's quote, "**The art of teaching is the art of assisting discovery**," perfectly encapsulates not only my pedagogical philosophy, but also my motivation for transitioning from industry to academia. In my 5+ years of teaching and mentoring, I have aimed to empower my students to boldly discover and trailblaze their unique paths. To that end, I have grounded my teaching and mentoring practices in three tenets.

First, instead of relying solely on lectures, I use **interactive discourse** as my **teaching style** to invite students' active engagement with course material. Besides facilitating better comprehension of the course for the students, this approach also allows me to build stronger interpersonal relationships with them.

Second, I **design my course assignments** to promote **learning by doing** so my students gain confidence in their knowledge and skills. As an architect, I have learned the strongest lessons through hands-on exercises.

Third, I prioritize **holistic evaluation**, emphasizing not just technical proficiency but also **critical thinking**. It is important to me that my students can confidently ask the right questions and be unafraid to challenge the status quo.

Teaching Experience

I have applied these tenets to a **broad portfolio of courses** in **Artificial Intelligence, Design, Human-Computer Interaction, and Entrepreneurship**, taught to **varied student groups** (middle school to graduate, and working professionals) in various **departments** (architecture, computer science, and management), **universities** (Mumbai University, Aalto University, and MIT), and **cultures** (Asia, Europe, Africa, and Northern America). I also completed the MIT Kaufman Teaching Certification Program before the first year of my Ph.D. in order to develop the pedagogical skills necessary to become a better educator for my students.

One notable instance of my teaching experience was being a teaching assistant (TA) for **one of MIT's largest classes** on Artificial Intelligence [1] with over 250 students enrolled. As the head TA for the graduate version of this course, I led recitations and seminars for students, many of whom were from non-computer science (non-CS) programs, like management, design, and humanities. Having transitioned from architecture to computer science, I knew firsthand the difficulties of keeping up with the intense core CS course. It was important to me that none of my students felt lost or left behind. Through interactive discourse in recitations and office hours, I built a personal rapport with my students where they felt comfortable asking questions and taking on the demanding course content. One of my graduate students who had transitioned from serving in the military to pursuing a career in management cited his **newfound inspiration to take advanced machine learning courses**. Witnessing him and other non-CS graduates persist and succeed in the course and chase their curiosity in the CS field was twice as fulfilling as it mirrored my own journey.

During my time at MIT, I have also co-taught and co-designed **the very first offering of the undergraduate Human-computer Interaction** course on Engineering Interactive Technologies [3]. Ensuring that students engage in hands-on lab exercises [fig alongside] to learn-by-doing was central to designing the course material intended to teach them digital design, fabrication, and electronics prototyping. While teaching this course, I guided my student teams to rapidly iterate on prototypes of their designs, empowering them to successfully create their very own adaptive tools for skill learning, some of which were presented as research posters. Several students who participated in this course described having **discovered their passion for HCI research and joined our lab as undergraduate researchers**, a couple of whom also **co-authored research papers with me**. Comprehending that their research journey was rooted in the class I designed was a pivotal moment that solidified my passion for teaching.



Besides engineering courses, I have also designed, taught, and TA-ed several **multidisciplinary interdepartmental courses** that focused on developing not just technical engineering skills, but also essential skills like **communication, leadership, entrepreneurial, and design skills**. For example, for the graduate course Leading Creative Teams [7] which is jointly offered by the **MIT Sloan School of Management and MIT School of Engineering**, and is part of the **Gordon Engineering Leadership (GEL) Program**, we focused on building organizational leadership skills by teaching **empathetic conflict management and creative problem-solving strategies**. Similarly, as the instructor for Global Startup Labs Africa (GSL) - Mauritius, I developed the curriculum for building technological startup ventures. The curriculum specifically focused on building a **creative mindset** that enables identifying crucial business opportunities and developing creative technological solutions that are impactful to society. Using this creative problem-solving approach, which I have learned and taught in several **architecture courses** [4,5,6], is central to all my courses. I aspire to **foster transferable critical thinking skills** among students as they venture into their careers to build a better society.

Mentoring Experience

The three pedagogical tenets are also central to my mentoring experience which involved advising **2 junior Ph.D., 3 master's, and 16 undergraduate students** in research projects. By combining a breadth-wise creative exploration and depth-wise scientific investigation into the research topic, I aim to train my advisees to articulate and analyze research through multiple lenses and build critical thinking abilities. For example, in one of my research projects, I led a studio-style workshop on immersive interfaces for designers and conducted seminar-style deep-dive discussions on scientific papers on skill learning. This approach led them to develop novel solutions, resulting in **7 co-authored research publications** at top conferences including an **honorable mention poster award**. One mentee also cited **developing a passion for research** during one of their projects with me **and went on to pursue a Ph.D. in Human-Computer Interaction at the University of California, San Diego**.

In conclusion, my pedagogical philosophy and practices are inspired by my research on learning and in turn inspire it. Witnessing my students chart their own pathways and knowing that my teaching and mentoring might have been instrumental in their decisions has profoundly impacted me. As a teacher and mentor, **I believe I had the privilege of shaping the minds of future thinkers by guiding their early experiences and discoveries**, and I am eager to continue my dedication to teaching and mentoring in my role as a Professor.

Teaching Plans

I am particularly interested in co-teaching courses on **Human-Computer Interaction, Research topics in HCI, and Digital Tangible User Interfaces**. I am also keen to leverage my design, learning sciences, and Human-Computer Interaction expertise to develop **interdisciplinary courses on topics of user-centered design, building scalable tools for education, and reskilling the future workforce**. Likewise, I am keen to organize **interdepartmental seminars** and **public lectures** on **Innovation in EdTech** and **Designing the Future of Work**. Through these initiatives, I aim to foster a stimulating environment that equips students with the knowledge and skills of the latest technological innovation and empowers them to not only have successful careers but also be the new generation of leaders.

References:

===== In-person courses =====

[1] 6.034, 6.844-Artificial Intelligence, MIT

Head Teaching Assistant for grad version of the course on AI and Ethics

Taught: Recitations for the 20+ students of a (250+ enrollment) class on Artificial Intelligence

Instructors: Dr. Kimberle Koile, Prof. Randall Davis

[2] 4.540, 4.541-Shape Grammars, MIT

Teaching Assistant

Instructors: Prof. George Stiny

[3] 6.810 - Engineering Interactive Technologies, MIT

Teaching Assistant

Taught: Developed the course material, labs and project briefs

Instructors: Prof. Stefanie Mueller

[4] Spatial Cognition in Design, Aalto University

Developed and led the 4-day workshop on designing tools for design, taught the workshop to graduate students in the media studies courses

[5] Computational Design, Mumbai University

Developed the course on parametric design and fabrication and taught 80+ undergraduate architecture students

[6] Parametric Design and Digital Fabrication, Bhartiya Vidyapeeth University

Developed and led the week-long workshop on digital design and fabrication to 40+ students, which resulted in the construction of two architectural pavilions

===== Remote courses =====

[7] 6.928 - Leading Creative Teams

Teaching Assistant, School of Engineering, MIT

Taught: Key leadership skills for creative problem-solving and team building

Instructors: Prof. David Nino

===== Online courses =====

[8] AI and Automation for Enterprise

Learning Facilitator, Schwarzman College of Computing, MIT

Taught: Groups with 25+ course participants on ethics and human-centered AI for industry

Instructors: Prof. Sertac Karaman, Prof. Daniela Rus, Prof. Jim Glass, Prof. Julie Shah, and Prof. David Autor

[9] Human-Computer Interaction for User Experience Design

Learning Facilitator, Schwarzman College of Computing, MIT

Instructors: Prof. Daniela Rus, Prof. Daniel Jackson, Prof. Randall Davis, Prof. Stefanie Mueller