

Looking back at my college years, I can clearly see the influence of my activities in student branches on my career. I completed my undergraduate education at Istanbul Technical University (ITU), which is the best engineering school in Turkey. Throughout my undergraduate studies, I was an active member of student branches, where I obtained a diverse set of technical skills, valuable experience on teaching, and joy of teamwork. Lessons learned from these experiences have helped me teach as an associate instructor during my academic life, work as a freelance consultant and trainer on robotic systems. As a researcher, I am keen on teaching and lecturing on diverse topics relevant to my background and interests. I believe advancement in teaching is a never-ending process and I seek opportunities to improve.

### Associate Instructor Experience

My teaching experience as an associate instructor (AI) started during my Master's studies. I worked as an AI for four different courses: machine learning, microprocessors, discrete mathematics, and probability and random variables. In these courses, I was responsible for grading, assisting students in office hours, and teaching in problem sessions.

Teaching in university courses is different compared to my experience in student branches, where students are keen on learning and improving themselves other than passing classes and earning grades towards their diploma. I observed how different incentives could impact the learning environment and performance of the students. Being an AI in mandatory courses introduced me to a different aspect of teaching. I accepted this challenge and focused on teaching the subtle details and insights of the topics.

During my Ph.D., I had great opportunities to work on different projects as a research assistant. One of the perks of having a research position is publishing several journal articles and conference papers. However, I didn't have a chance to teach except for my last semester at Indiana University. I taught in a course, called *Performance Analytics*, for senior Informatics students. In this course, we taught students how to retrieve and extract online data, measure and characterize performance using statistics and network theory, and build predictive models. As one of the AI of this class, I developed short tutorials on web scraping, network visualizations, and practical applications of natural language processing, machine learning, and network analysis.

As a postdoctoral researcher, teaching opportunities are limited, but I am glad that opportunities created by my mentors to teach in a graduate level course on *Data Mining Techniques* offered at Northeastern University. In this course, I was invited to present two lectures: an overview of probability and linear algebra and my research on social bot detection.

### Mentoring

In my new role as a postdoctoral researcher, I have begun to mentor graduate students at my current and previous groups. I regularly meet with two students from my former group through Skype for improving Botometer and study questions on social bot detection. I mentored two other Indiana University students for their class projects on detecting organizational accounts on Twitter. These collaborations are great since I learn to effectively communicate, provide students with guidance to complete their projects by planning clear intermediate steps and suggest the most appropriate analysis and tools for their goals. I have also been mentoring a Ph.D. student in my current group and collaborating with her for two projects on building a novel learning-to-place algorithm and algorithmic fairness.

In the CNetS and NaN group at Indiana University, I witnessed the importance of friendly lab environment and how social activities can motive students to work more efficiently. I am eager to follow in the footsteps of my great advisors not only by following their academic lessons but also social ones.

## Lecturing and Outreach

Starting from my freshman year in college, I engaged with the activities in student branches. I joined different teams to learn programming languages like C and Python and built mobile robots. After my experiences in programming and electronics, I volunteered to teach in our student branch. In my second year, I taught C programming and data structures to over 30 students. In those lectures, I had a chance to explore different models to convey information and engage with the group. I believe in the importance of interactions, so in each lecture, I was providing a challenging problem at the beginning and explain the concepts relevant to that problem. By the end of each class, we would go through the solutions with students and have a discussion in a group. At the end of the year, we put our knowledge into practical applications by programming microcontroller to build mobile robots and developing web applications to support international robotic olympics of our university (ITURO).

My experience during college in robotics and computer vision created opportunities to participate in international competitions and serve as a referee in Euro Skills and World Skills competitions. I also worked as a consultant and trainer for Festo's mobile robotic platform called *Robotino*. As a trainer, I presented in day-long workshops in high schools and universities, where I taught functionalities of Robotino and its applications as a testbed system. This experience is beneficial because I had a chance to reach a diverse audience. Depending on the group, I explained the basics of control and image processing algorithms in various levels of details. By doing so, I improved my abilities to make abstractions on concepts and provide insights into more complicated systems.

## Teaching Agenda

As my educational background and research spans various fields, I can teach a broad spectrum that includes introductory computer science courses, as well as advanced undergraduate and graduate courses on data science, machine learning, and network analysis. Richard Feynman, the great educator and scientist whom I genuinely admire, once noted the difference between knowing the name of something and knowing something. I take his insights seriously and try to apply that to every aspect of my research and teaching. I also look forward to designing new classes that can address data science field by not only introducing different concepts but also explaining them in sufficient details and providing practical examples. I am interested in teaching and developing courses in machine learning, network science, and computational social science. Here are examples of two such courses:

**Data Mining and Information Discovery:** In this class, students would explore novel ideas for their class projects. They would learn all steps of data analysis and apply them weekly to their plan: crawling and cleaning dataset, dataset exploration and visualization, building machine learning models, and system evaluation, etc. Every week relevant scientific publications especially research questions and methods would be discussed in class. Students would be encouraged to select topics pertinent to their personal interests, and there would be no limitations on topics or domains for research. The successful interdisciplinary project usually emerges from such a mindset; and creativity will be a critical factor in class evaluation. Students with a strong hypothesis and strong analysis will be supported to publish their work.

**Practical Data Science:** Nowadays data science has become a vibrant subject and different schools across the world offering degree programs in data science. In this course, students would learn a broad list of topics for research and business application purposes. Core components of this course would be probability theory, statistics, and hypothesis testing; methods for supervised and unsupervised learning for machine learning; and data visualization. Throughout the semester students would be introduced to various technologies, packages, and tools. Learning through interactive classrooms are important. I plan to use Jupyter notebooks to encourage students to do reproducible research effectively. Assignments would be the main component of this course, measuring how knowledge is put into practice.