Tapajit Dey

TEACHING STATEMENT

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Teaching Philosophy

I believe the goal of education is to prepare everyone for dealing with the challenges they might face in later life and to enable them to fulfill their maximum potential. In order to achieve that, students need to master the skill of learning new concepts quickly and acquire various soft skills along with the academic content taught. Therefore, in the courses I have taught, I have tried to focus on building ability and confidence in the students, nurturing their soft skills while connecting the material taught in the class with real-world examples, and inspiring the students to think about how to use their skills to solve real problems. I have undergone training in "Universal Design for Learning (UDL)"(Link to Certificate given to *tapajit.dey@lero.ie*), a framework from the National Forum for the Enhancement of Teaching and Learning in Higher Education in Ireland for designing an inclusive learning environment and creating a culture of engagement that affords all students equal opportunities to learn, including students with disabilities. It has broadened my view to better understand and account for the different needs of students while developing and delivering the course material, engaging with them, and assessing the learning outcomes.

Teaching Experience

Primary Teaching Experience

Course: I am co-instructing the undergraduate course "Introduction to Information Technology" at the University of Limerick with Prof. Brian Fitzgerald since Fall 2020.

Teaching Objective The course introduces modern technology solutions like Cloud Computing, AI, Internet of Things, etc. to *first and second-year undergraduate students* to familiarize them with the technologies they interact with or will be interacting with in near future.

Delivery: Due to the COVID pandemic, the class was moved online in AY 2020-21, but the in-person lecturing began again in Spring 2022. This gave me a chance to experience conducting the class both in *online* and *offline* settings.

Key Contributions: Although I did not have full control over how the class is conducted, I was able to convince Brian to allow me to make several updates to the course material and the style of delivery. Some of the key highlights are as follows:

○ **Content Update** - I renovated the course by adding more up-to-date content (e.g., edge computing, cybersecurity) in Fall 2021, which is the first update to the content of the course in over ten years.

○ **Engagement & Accessibility** - In accordance with the UDL guidelines which propose using multiple modes of engagement tactics for the students and presentation of the material, I decided to adopt a "Blended Learning" approach during the class. I implemented that by 1. Occasionally showing students various videos on the lecture topics, 2. Giving them additional lightweight reference materials they can read later at their own pace, 3. Having the students participate in group discussions around the topics taught in the class in order to come up with questions(I encouraged them to ask difficult questions), and 4. Having the slides and lecture videos (with subtitles) available for them online so that they can revisit the content later if needed.

○ **Assessment** - The UDL guidelines suggested employing different methods of assessing the student learning outcomes. Therefore, I decided to move to a project-based assessment in the course that requires students to think about applying what they learnt in the class in a real scenario. I designed the grading rubrics and the project objective, which asks the students to propose how to apply the technologies learned in class to help actual companies dealing with the problem of COVID-related disruptions, which has been an important problem since I started taking the course. The students were given the option of either submit a write-up with their solutions or make a video presentation about the same in order to given them more flexibility in terms of how they want to express themselves.

Other Teaching Experiences

During my Ph.D. at the University of Tennessee, I served as a TA in multiple courses and also mentored several undergraduate students who worked in our lab, and the collaborations with those students have resulted in several publications. I had also conducted a series of lectures on Python when I was working at IBM and served as a TA in a course on Signal Processing during my Masters in India.

Supervision Experience

In terms of advising, I have supervised the Master's theses of 5 students from the M.Sc. in AI & Machine Learning course at UL since 2021 and also served on the thesis committee of multiple other students from software engineering and AI & ML Master's programs. I am currently co-supervising two professional Ph.D. students as well, one of whom is looking into modeling agile practices in companies and the other is trying to build early defect prediction models for firmware code. My advising experience has made me realize that many students possess in-depth technical knowledge, but lack the skills of forming coherent research questions and stories and conveying the results of their research effectively to a wider group of experts beyond their advisor. To remedy that, I focus on continuous mentoring and developing a growth mindset in the students, inspiring them to think about the practical applications of their work and how to promote their work to potential stakeholders. While I recognize that I have much to learn about teaching and mentoring, I look forward to mentoring more future researchers and helping them succeed in their work and life.

Prospective courses

Given my background and experience, I would be happy to teach undergraduate or graduate-level courses on empirical methods, software engineering, data mining, machine learning, or mining software repositories. At the same time, I am comfortable with teaching undergraduate courses on Python or R programming, data structures, operating systems, databases, and Probability & statistics.

I personally prefer courses that teach practical skills over purely theoretical ones and encourage the students to learn the subject matter by working in group or individual projects, a practice I have implemented in the course I am currently teaching.