

Teaching Statement

Hieu Le

levanhieu.com

My research deals with privacy and network measurements for a variety of online platforms, such as the web, smart TVs, and Oculus VR. In addition, I have ten years of experience being a software engineer, using both front and back-end web technologies. As such, I anticipate teaching core classes such as Computer Networks and Algorithms, concentration classes for Web and Mobile Development, and special topics classes such as Data Privacy for Emerging Platforms.

Mentoring Experience. I have mentoring experience in both industry and academia. As a software engineer and lead, I have learned to curate lessons for different people, from interns to mid-level engineers, so that they can succeed and grow accordingly. For instance, besides giving more concrete tasks to interns and entry-level colleagues, I make sure that they can explain their choices for algorithms, data structures, and primitives. For mid-level engineers, I give them small projects that they can lead, such as adding new features, which allow them to develop their skills using CS design patterns. This personalized mentoring strategy also applies to academia. For example, when working with three undergraduates on research projects, I give them manageable tasks, such as labeling datasets with specific instructions. This starting point is crucial to make research accessible for students. Once they see that they can succeed, I will give them more open-ended tasks, such as finding approaches to automate the labeling. In the end, all three undergraduates expressed that they enjoyed research: two went on to pursue graduate studies, while the projects that they supported were published at top security and privacy conferences. Furthermore, I have helped coauthors improve their proficiency in data analysis. For example, when working with two large datasets of collected network traffic for Roku and FireTV, we can focus on outgoing domains and compare them to existing mobile datasets, or we can compare common apps between them. My coauthors have expanded on these ideas for their subsequent papers. Overall, I treat mentoring as learning opportunities for both myself and others: we discuss how to arrive at the best resolution using critical thinking as a team.

Teaching Philosophy. I will broadly strengthen computer science concepts and their practical applications that pertain to understanding our ever increasingly online world, and how they can be leveraged to build new methodologies and tools that can have a societal impact. As faculty, I will adapt my mentoring experiences from industry and academia to prepare students for both possible career paths. I plan to combine homework assignments focusing on fundamental concepts, interactive quizzes to increase class participation, and course-long team-based projects to build analytical and practical skills. For example, I will prepare interactive trivia-style quizzes using online services, such as Kahoot, which will be fun for students. But importantly, it will identify which concepts are not well understood so that I can tailor upcoming lectures to revisit and reinforce those concepts. Second, I will design course-long projects. For instance, for the Algorithms class, a project can implement an algorithm that can retrieve the most product names from Amazon's website within five minutes. Students will also write a short report describing the algorithm, analyzing its theoretical run-times and space efficiency and comparing them with real-world results. On the other hand, the special topics classes will be more research-oriented, where students are encouraged to define their projects, such as investigating social media apps on VR (*i.e.*, metaverse) to understand data collection practices by advertisers and trackers. Or act as a malicious app developer, and

create a game that collects user data that can be used to identify sensitive attributes.

Advising. As a faculty advisor for PhD students, I will form a diverse group of students with complementary skills that can conduct research toward my goals of improving transparency, auditability, and control of user data in online platforms. Students will be given the freedom to pursue projects within these themes. I will tailor my guidance depending on the student's experience. For first to second-year students, I will mentor them on how to digest research papers and organize ideas. In addition, they will work jointly with other senior students on existing projects to experience end-to-end what it takes to publish a paper (*e.g.*, initial submission, rebuttal, revisions). This will allow them to learn state-of-the-art methodologies for data collection and analysis. Onwards, I will expect students to lead their projects, including defining the project scope and story. As an advisor, I will contribute to the research but also ensure that the students understand their research space well (*e.g.*, by knowing standard concepts and prior work), along with being able to explain and defend the intellectual merit of their projects. Overall, I would like to develop independent academics that are spirited in producing work that can benefit society.

Lastly, I do not have a teaching record because I have been supported as a GSR throughout my studies. This is one aspect that I look forward to improving as a research fellow and/or faculty.