Teaching Statement **Liz Izhikevich**

I am passionate about teaching and mentoring. I co-authored a textbook [1] used by over 93,000 students [2], co-created a graduate networking course, mentored eight students, and assisted class instruction for 9 quarters across Stanford and UC San Diego. I am excited to teach systems, security and networking courses at both the undergraduate and graduate level. If the opportunity exists, I would love to collaborate with computing education researchers and to experiment with new teaching methods in my classes.

Teaching. I believe great teaching starts with the content we teach and the materials we teach with. At Stanford, I co-created a new graduate course that teaches how the Internet operates *in practice*. We built the course in response to a common pedagogical pitfall: we expose students to a simplified view of the world to help introduce new concepts, but often run out of time to teach students about the complexities of the real world. The Internet, in particular, is far more complex than the types of networks we often teach students in traditional networking courses. Thus, we created a new course where we show that protocols on the Internet often do not follow RFC standards, routing is often dictated by financial relationships and not shortest paths, and conceptually-simple security solutions are not widely adapted. Creating the course gave me experience with how to build a course from scratch and apply for administrative course approval. I would love to bring and teach this course at my future institution.

In 2016, I co-authored a textbook about the design of data structures, which has been used by over 93,000 students at UC San Diego and other universities for the past 6 years. Notably, this textbook is accompanied by online interactive programming exercises, which actively engage students with the content. My textbook mitigates a common issue found in traditional class settings: the first opportunity students are given to engage with content is during a homework assignment, which can take instructional staff days to weeks to provide feedback. Furthermore, students are under immediate pressure to get a good grade. In contrast, the online interactivity of the textbook gives students the freedom to immediately learn through trial-and-error without feeling penalized. For every course that I teach, my plan is to design interactive content that allows students to immediately apply what they learned at their own pace. I would gladly teach my textbook at my future institution.

Mentorship. I have mentored eight undergraduate and masters students, all of whom have successfully published with me [3, 4, 5, 6]. To maximize student growth and project success, I ensure each student feels personally curious about their research project. I never assign a project to a student, but rather pitch multiple ideas or problems and work with the student to choose and mold their own research path. I guide students to take creative independence and full-ownership of their contributions, with the expectation that they will often succeed, but sometimes fail. I help students build their own taste for choosing meaningful research questions and creating rigorous solutions.

References - † indicates mentee, ∗ indicates co-first authorship

[1] Niema Moshiri and **Liz Izhikevich**. *Design and Analysis of Data Structures*. 2016. ISBN: 978-1981017232.

[2] Niema Moshiri and **Liz Izhikevich**. Data Structures - Online. `https://stepik.org/course/579`, 2016.

[3] Maya Ziv†, **Liz Izhikevich**, Kimberly Ruth, Katherine Izhikevich†, and Zakir Durumeric. ASdb: A System for Classifying Owners of Autonomous Systems. In *Proceedings of the 21st ACM Internet Measurement Conference*, 2021.

[4] Jack Cable*†, Drew Gregory*†, **Liz Izhikevich***, and Zakir Durumeric. Stratosphere: Finding Vulnerable Cloud Storage Buckets. In *Proceedings of the 24th International Symposium on Research in Attacks, Intrusions and Defenses*, 2021.

[5] **Liz Izhikevich**, Manda Tran†, Michalis Kallitsis, Aurore Fass, and Zakir Durumeric. Cloud Watching: Understanding Attacks Against Cloud-Hosted Services. In *Proceedings of the 23rd ACM Internet Measurement Conference*, 2023.

[6] **Liz Izhikevich**, Gautam Akiwate, Briana Berger†, Spencer Drakontaidis†, Anna Ascheman†, Paul Pearce, David Adrian, and Zakir Durumeric. ZDNS: A Fast DNS Toolkit for Internet Measurement. In *Proceedings of the 22nd ACM Internet Measurement Conference*, 2022 ⋆**Community Contribution Award**⋆.