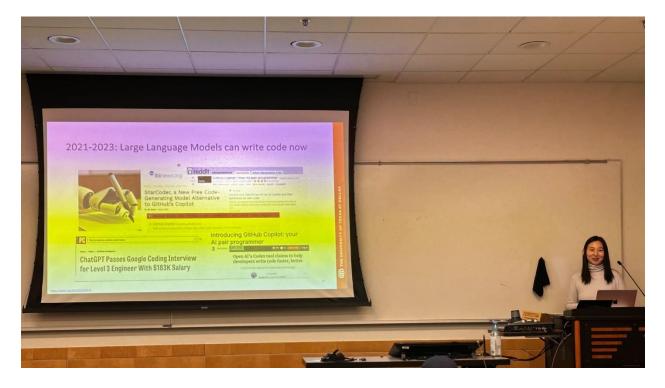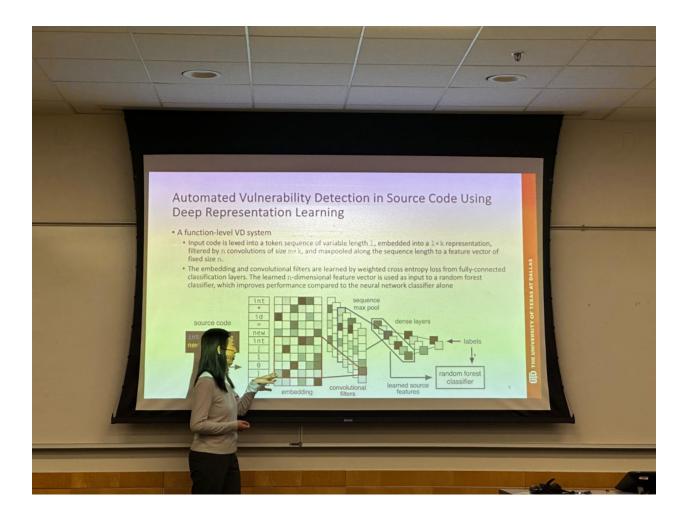# Technical Seminars on Deep Learning-based Software Vulnerability Management

W. Eric Wong
Chair of RS Dallas Chapter

The Dallas Chapter of the IEEE Reliability Society in conjunction with the Department of Computer Science at the University of Texas at Dallas organized a technical seminar by Professor Xinda Wang. The focus was on Deep Learning-based Software Vulnerability Management.

Recent research advances in Deep Learning (DL) have yielded promising results for automated software vulnerability management. DL-based models are reported to greatly outperform traditional static analysis tools, indicating a substantial workload relief for security practitioners. In this talk, Professor Wang first introduced the latest research efforts on developing and adapting DL-based approaches including convolutional, recurrent, and graph neural network for vulnerability detection. Then, she discussed the main challenges of applying DL-based vulnerability detectors in real-world settings. Next, she presented recent research on examining the effectiveness of Large Language Models for vulnerability repair. The talk was concluded by highlighting the future research and engineering direction towards maximizing DL capabilities in automating the process of software vulnerability management.

Dr. Xinda Wang is an Assistant Professor of Computer Science at the University of Texas at Dallas. She received her PhD degree from George Mason University in 2023. Her research interest is software security, with a focus on applying machine/deep learning for vulnerability detection, patch management, program analysis, and software supply chain security enhancement. Her works have been published in flagship security venues such as IEEE S&P, DSN, TDSC, etc. Her security vulnerability/patch detection software and dataset have been downloaded by over 80 worldwide institutions. She is the recipient of the IEEE CNS Best Paper Nomination (2020) and Grace Hopper Celebration Faculty Scholarship (2023).