

My journey in computer science has cultivated a deep interest in software systems and their security, leading me to apply for an internship position in the MPI Software Security group led by Dr. Marcel Böhme. My interest in software testing was particularly sparked through my connection with Ardi Madadi, who was my mentor at my university before joining MPI-SP as a PhD student. Through attending his poster session and learning about his work on mutation testing at our university, I gained valuable insights into this critical aspect of software security. Learning that Ardi continued his research journey at MPI-SP has strengthened my interest in contributing to the team's research efforts.

During my internship at Amazon AI Lab, I gained valuable experience in system optimization and testing infrastructure that I believe will be particularly relevant to the group's research. While working on the Deep Graph Library, I implemented comprehensive regression benchmarks and developed an automated testing pipeline, experiences that gave me insight into the challenges of maintaining and testing large-scale software systems. The successful implementation of these testing frameworks improved our ability to catch potential vulnerabilities and ensure system reliability.

My role as a Teaching Assistant for Programming Languages courses has deepened my understanding of language design and interpreter construction. This theoretical foundation, combined with my practical experience in developing extensive test cases (700+), has given me a unique perspective on program analysis and testing methodologies. The experience of creating and maintaining autograder scripts has honed my skills in systematic testing and validation, which I believe will be valuable in contributing to the group's work on empirical methods for program analysis.

Furthermore, my experience as a Database Research Assistant at the UW PLSE Lab, where I worked with large-scale data processing (400+ million data points), has equipped me with skills in handling and analyzing extensive datasets. This experience aligns well with the group's focus on statistical and causal reasoning in program analysis, and I'm particularly interested in how these methods can be applied to vulnerability discovery at scale.

The interdisciplinary nature of the group's research, combining elements of software testing, machine learning, statistics, and databases, perfectly matches my diverse technical experiences. My background in system optimization and graph neural networks could contribute fresh perspectives to the group's research in vulnerability discovery and program analysis, while my experience with large-scale testing frameworks aligns well with the group's focus on practical software security solutions.

Having witnessed Ardi's journey from our university to MPI-SP, I am inspired by the opportunity to contribute to cutting-edge research at such a prestigious institution. Thank you for considering my application. I look forward to the possibility of contributing to the innovative research being conducted at the MPI Software Security group and continuing my academic journey in an environment that has already fostered the growth of researchers I admire.