



Mail Analyzer: Analyzing Cloud-based Email Use
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Thanks to the scholarship I received from the Association of Alumnae, I was able to complete a successful research internship at RWTH Aachen University in Aachen, Germany this summer. The Undergraduate Research Opportunities Program, run by the university in Aachen, provided the internship opportunity. I worked as a member of the Security and Privacy in Cloud Computing research group, run by Martin Henze, at the Chair of Communication and Distributed Systems. While there, I built a program called Mail Analyzer that analyzes the extent of cloud-based email use in a given dataset of emails, e.g. a mailing list or private inbox. The purpose of the project was to build a tool that informs users of the extent to which the security of their emails might be jeopardized by their interactions with cloud service providers along the paths they take from sender to recipient. Mail Analyzer works by reading in key components of an email's header, the element of an email that indicates the route it takes to get across the Internet, and matching the contents of these components with information that we provide for a range of cloud-service providers. By the end of my internship, I had developed a functioning beta-model of Mail Analyzer, and we were able to gather results from a large public mailing list archive.

In all, my internship taught me a great deal about cloud computing, the nuances of security and privacy on computer networks, and general problem solving techniques in the discipline of computer science. I also taught myself an entirely new programming language to complete the implementation of my project. I most enjoyed the process of applying my coding skills and acquiring new ones in a practical setting. It complimented my educational experience in computer science at Penn very well. I plan to apply the lessons in I learned from this internship experience, namely in coding and technical problem solving, to the coursework and research of the next steps in my academic career.