Synthesis of UVA CS Handbook Data from a Formalized UVA CS Curriculum

(Technical Paper)

An Investigation of Privacy Concerns Brought About by Digital Assistants

(STS Paper)

An Undergraduate Thesis Portfolio Submitted to the

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Bachelor of Science, School of Engineering

By

Benjamin Barrett
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Sociotechnical Synthesis

There is no direct relationship between my technical project and my STS paper. The technical report examines data representation techniques and visualizations of the UVA CS curriculum. Digital privacy is one of the most critical issues facing consumers in the 21st century. As the number of devices in homes and in daily lives increases, a growing amount of data and personal information is being stored digitally. My STS report examines privacy issues that arise from digital voice assistants like Amazon's Alexa. It is critical to understand societal forces in the creation of these technologies. In particular, the relationships between companies, consumers, and government.

In my technical project, I create a utility that will generate prerequisite graphs and requirement checklists for an arbitrary curriculum. The effort focused on the UVA CS curriculum and discovered what parts of the CS handbook could be generated automatically. In my STS research, I explore privacy issues related to digital voice assistants. The research revealed that companies did not consider the extent of the user's privacy concerns until years after the fact. It finds that no digital privacy act exists for the United States as a whole and recommends the establishment of some national digital privacy standards.

In completing both projects, I was able to gain an understanding of both practical development and the ethical landscape surrounding digital privacy. I learned that when developing software, engineers need to think about their customers from more than a utility standpoint. Engineers need to understand the society surrounding their users as well. This will lead to technologies that are more in tune with users' unspoken expectations about privacy.

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