Thesis Project Portfolio

IMPROVING CS EDUCATION AT THE UNIVERSITY OF VIRGINIA BY INTEGRATING ELECTIVES

(Technical Report)

EFFORTS TO SUCCESSFULLY ADD ETHICS TO CS EDUCATION

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

Computer science (CS) is a field of study that is constantly evolving and because of this the education of computer science must evolve with it. The ultimate goal of the my entire thesis portfolio is to examine computer science education.

My technical paper does this through examining how CS electives could be better utilized to educate students. There is a current problem with CS graduates as there a lot of gaps in computer science learning and integrating electives can better educate CS students. The goal of this paper is to show how integrating CS electives could be potentially beneficial to a students education as they could experience multiple areas of computer science and integrate these areas together.

My STS research paper examined the ethics portion of computer science education and how the education of ethics can be lacking in certain areas. The paper looks at various stakeholders and their impact on ethics education in computer science. Stakeholders such as students, professors, colleges, software engineers and policy makers have an immense impact on current CS ethics education, and this paper explores their impacts. The goal of the paper was to show that in order to improve ethics education in CS, all relevant social groups must be examined and a solution must be created that is beneficial to all of these groups.

These papers combine to look at CS education and problems within that education. It is imperative to improve this education as the field of CS grows in its influence. Current CS graduates can be behind on both technical and ethical skills and figuring out ways to educate these students can go a long way. Overall, computer science education must adapt just as much as computer science is adapting or it risks leaving those learning computer science behind.