Thesis Portfolio

Analysis of the Detection of Abnormal Behaviors in Smart Homes
(Technical Report)

State of the Fight against Fracking in America and its Environmental Effects in the Northeast and Gulf Coast
(STS Research Paper)

An Undergraduate Thesis

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Bachelor of Science in Computer Science

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Sociotechnical Synthesis

Technical Topic - Analysis of the Detection of Abnormal Behaviors in Smart Homes

As the Internet's presence grows in society, its applications are becoming more omnipresent in different facets of our everyday life. One of those facets is smart home security systems, a set of sensors relaying information back to a main unit that protects the security of a residence. However, like all other Internet-connected devices, they can be hacked into and tricked by malicious software. This technology has human and social dimensions as the safety of a home's residents relies upon it. Therefore, I will research how our models and algorithms can best identify data coming from malicious devices. I will accomplish this by feeding different sets of modified data to the model and observing the following results in order to draw conclusions. By optimizing the model's ability to recognize this, the system will be able to better preserve its residence's safety.

STS Research Topic - State of the Fight against Fracking in America and its Environmental Effects in the Northeast and Gulf Coast

Fracking, its meteoric rise in the US and harmful repercussions on the environment. Hydraulic fracturing, commonly known as "fracking", is a natural gas/crude oil extraction technology widely used throughout many shale plays in US states. It's important to consider the human and social dimensions of this technology as it could potentially enact change to make the dimensions of hydraulic fracturing safer, improving the lives for those who reside in areas affected by the practice. The STS theories I'm using to analyze my problem solving approach are responsible innovation and technopolitics. Additionally, I am planning on utilizing content of

case studies analysis and policy analysis methods to conduct my STS research. Through my research, I expect to find a causal link between hydraulic fracturing and the numerous detrimental environmental issues it has been expected to create by analyzing case studies and surveying public opinion. I also would like to piece together a timeline based on how certain government policies may have encouraged the rise of this practice in certain states. My STS research and the technology will bring to light the practice's consequences on drinking water and the seismic activity in Pennsylvania and Texas. It will also examine its emergence in states such as North Dakota and Colorado and introduce novel ways in which its effects can be mitigated, given knowledge from previously fracked states.