

Thesis Project Portfolio

Pantastic: Development of Self-Monitoring Stovetop Fire Prevention Technology

(Technical Report)

Self-Monitoring Health Device Implementation During COVID-19

(STS Research Paper)

An Undergraduate Thesis

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

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In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

My capstone research addresses the issue of home fires that were started on the stovetop due to unattended cooking. Along with this, we also wanted to address the overall forgetfulness that comes in a busy working environment, specifically in college and people with memory issues. The technology that we created was a device called Pantastic that was a mounted device with an infrared temperature sensor. The sensor connected to both an on-board and internet interface that gave two separate ways to alert the user of prolonged stovetop time, regardless of the proximity. The human and social dimensions of this technology are important to consider due to having a fairly narrowed down target social group for Pantastic. Along with this, the disastrous effects of home fires and the faith put into a product like this would mean there are significant effects if the device does not work as intended.

With actor network theory being the primary way of problem-solving for the creation and development of Pantastic, it led to the consideration of multiple different socio-technical groups who could be adversely affected by our product. The research done into the unintended consequences for the technical project is what led to the interest in the unintended consequences from the integration of new health-monitoring devices rapidly into society. To do this, I will primarily be using the Interactive Sociotechnical Analysis (ISTA) model as a basis for examining these devices. Case studies and existing survey evidence will be the primary ways that the research into these health-monitoring devices will be conducted by breaking down the scenarios and results under the given framework. I expect to find that the engineering processes were rushed in some cases, which led to devices that were difficult to integrate into the existing infrastructure and in some cases, did not properly account for the target social

groups. Thus, with the engineering process of Pantastic and with the research into the privacy and engineering concerns regarding the development of other health-monitoring devices, new health-related self-monitoring devices can be engineered with less unintended consequences for the entire user network.