Thesis Project Portfolio

Improving the Digital X-Ray Sensor Positioning Device for Improved Images and Reduced

discomfort

(Technical Report)

Integration of Dental and Medical care through Co-Locations

(STS Research Paper)

An Undergraduate Thesis

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In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

Most people hate going to the dentist, maybe it is because children's TV shows portray the dentist as the villain or maybe because there is a lack of technological advancements and accessibility. The way to combat this is through improving the patient's experience, whether that is through improved x-ray procedure or with better facilities. Dentistry is being recognized as a vital part of healthcare by more people; studies have shown that oral health can affect heart problems. The most effective way to solve a problem is to stop it from happening in the first place.

My technical thesis project aims to reduce discomfort caused by the current digital x-ray positioning device and take a diagnostic image on the first attempt. The current positioning device is bulky and cuts into the patient's cheek and gums; it is hard to align properly between the teeth causing unnecessary exposure to x-ray radiation if the image is taken at the wrong angle or distance from the teeth. These mistakes result in images that have overlap of teeth, then the dentist is not able to clearly read the x-ray. Our device is a sleeker design with a small ridge that can have a positive seat in between the teeth being imaged. This forces the x-ray sensor to be placed at the correct angle every time. Our first iteration of testing proved that we are 95% confident that our device is more comfortable than the current device and 79% confident that it is more accurate in procuring diagnostic images.

For my STS thesis I choose to research the integration of medical and dental care through co-locations. People struggle to see health professionals because of accessibility: time, financials, and location. Creating care facilities with dentists, general practitioners, etc. and

preventative care treatment will allow for patients to take control of their health. These types of integrated offices have been popping up around the country, mostly in rural areas where there is very little access to health care. Co-locations foster a sense of community and collaboration because the health professionals are easily able to work together and consult on a patient.

This year I learned a lot about the dental field, and obtaining knowledge is always considered a success. I achieved my goal of redesigning a device that could limit x-ray exposure and help dentist diagnose patients easily. My STS research was very informative and interesting, I discovered a series of dental lectures that meets monthly to discuss the integration of the medical and dental fields, and more about how to combat the inequalities in. I confirmed that the future of the medical world can be a place of collaboration and thinking outside of the box.

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