Vaishnavi Kotha

// Always designing something new.

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Education

Bachelor of Engineering **with Honours**
Major in **Biomedical Engineering**
University of Guelph

Sept 2016 – July 2020

Dean's Honours List (3 semesters)

Experience

Summer Student, Princess Margaret Cancer Centre

May 2019 – Aug 2019

Principal Investigators: Dr. Jennifer Croke, Dr. Kathy Han, Dr. Michael Velec, and Dr. Tony Tadic

- Developed autosegmentation methods in RayStation to assist in the automatic contouring of specific organs at risk (OARs) during the treatment of cervical cancer
- Created a reference atlas and evaluated the performance of both atlas-based and model-based segmentation tools for a set of test cases using geometrical agreement analyses with manually defined contours
- Defined and manually delineated relevant anatomical reference points and contours; Quantified the accuracy of deformable image registration using geometrical agreement analyses of mapped vs. manually defined structures
- Authored an instructional manual to assist clinicians and technicians in the use of segmentation tools and methods in RayStation
- Constructed a control theory based approach for practical implementation of adaptive radiotherapy

Research Intern, Medical Makers Inc.

Mar 2017 – Mar 2018

- Managed and coordinated multiple projects simultaneously on the development of customized diagnostic and therapeutic medical devices for patients worldwide
- Liaised with other departments to provide regulatory input on product development and to ensure compliance with national and international standards and regulations
- Used Solidworks Assembly software to computer automate process design; constructed Solidworks drawings of prototype parts for dimensional analysis
- 3-D printed prototype designs using Cura software and FlashForge 3-D Printer
- Conducted data analyses of material defects and investigated potential alternatives; Examined means of limiting defects through rigorous material testing of alternatives
- Regularly consulted with patients throughout design development phase to ensure efficacy of design, compliance with customer needs and overall customer satisfaction

Skills

Software

- Solidworks, AutoCAD, Altium CircuitMaker, Fritzing, ANSYS

Programming Languages

- Proficient: Java, C, Matlab, Python
- Familiar With: Arduino, G-Code, HTML/CSS

Design Tools

- Adobe Illustrator, Adobe Photoshop, Adobe Lightroom, Inkscape, Krita

Applications

- Microsoft Office Suite (Word, PowerPoint, Excel, Project, Access), LaTeX

Projects

Hospital Navigation System
University of Guelph

Sept 2019 – Dec 2019

- Designed and constructed an internal hand-held hospital navigation system using Bluetooth Low-Energy (BLE) technology
- Developed a pathfinding algorithm in Java and Python that assists in providing real-time directions to a prespecified location within a designated space. Front-end demonstration was implemented using HTML and CSS for user-friendly interface.
- Designed overall demonstration concept and presented idea to professionals within the communications technology industry at the University of Guelph Bioinstrumentation Design Day Trade Show
- Technical skills used: Java, Python, HTML, CSS

Hand-held Dynamometer
University of Guelph

Jan 2020 – Apr 2020

- Designed an automated hand-held dynamometer to assist physiotherapists in manual muscle testing at DEFY Sports Performance and Physiotherapy
- Constructed a full-scale prototype with load cells, load cell amplifiers, LCD screen and Teensy microcontroller; Wiring diagrams were created using Fritzing software; Data logging was programmed using Teensyduino software add-on for the Arduino IDE
- Technical skills used: Fritzing, Teensyduino