Hayden Gunraj

2A Mechatronics Engineering

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Skills

- Over two years of programming experience in **Python**; intermediate knowledge of **C++/C**
- Knowledge of object tracking and image/video processing using **OpenCV**
- Experience in scientific computing and data visualization using **Numpy** and **MatPlotLib**
- Familiar with **HTTP**, **REST APIs**, and webserver development using the **Flask** framework

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Experience

Technical Systems Analyst CIBC Enterprise Architecture, May – August 2017

- Aided in design of wire transfer systems to align with **SWIFT GPI** and **ISO20022** standards
- Utilised **Unified Modelling Language** to illustrate systems architecture and solutions
- Additionally, worked as part of the Portfolio Management team to track funding and strategy alignment of technology projects in **Excel**
- Implemented task automation in **VBA** to remove several manual processes, and re-wrote formulas and processes to improve speed by ~50%

Projects

MotionTracker September 2017

- Created a **Python** library for **object tracking** and motion analysis in videos using **OpenCV**
- Employed HSV thresholding and other processes to locate and follow desired objects
- Developed functions for drawing and manipulating axes and scale through a user interface
- Applied kinematics and transformation equations to calculate velocity and acceleration
- Defined plotting functions for visualization of motion using **MatPlotLib**

Golf Tee Robot November 2016

- Designed and programmed a golf tee resetting robot using **C** and the EV3 robot kit
- Employed **motor encoders** and **sensors** ensure safe and accurate ball placement
- Implemented automatic logging to track and quantify issues with the robot's operation
- Collaborated with team members to ensure smooth integration of the mechanical and software systems

Crafty July 2016

- Utilized **Python** with **Flask** to implement a chat bot for video game players
- Expanded knowledge of **HTTP** protocols through implementing request/response logic through the Kik Bot **REST API**

Education

University of Waterloo BASc, Mechatronics Engineering, 2016 – present

- Relevant Courses:
    - MTE 140 – Algorithms and Data Structures (C++)
    - GENE 121 – Digital Computation (C++)
    - MTE 201 – Experimental Measurement and Statistical Analysis
    - PHIL 226 – Biomedical Ethics