Harsh Patel

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WORK EXPERIENCE

York University - VGR Lab Toronto, ON

Research Assistant - Python Developer *May - September 2021*

- Researched and developed a GPS based autonomous navigation system for ASVs (Autonomous Surface Vessel) to identify and monitor invasive aquatic plant species in lakes across Ontario using **Python, XML, Bash and ROS**. This navigation system increased navigation accuracy and reduced navigation time by 300%.
- Developed an app using **Python, Node JS and ROS**, that connects to the Autonomous Boat and provides the user with an Open Street Maps based graphical interface that can be used to select regions to monitor, reducing the deployment time by 500%.

York University - SDCN Lab Toronto, ON

Research Assistant - Python Developer *May - September 2020*

- Designed and developed a vision-based localization and navigation method for unmanned vehicles in an indoor GPS deprived environment using **Python, C and ROS**. This system was developed to provide a navigation system to a self- navigating tour guide robot at Sherman Health Sciences Research Center at York University.
- Assembled a multi-agent system with Unmanned Aerial Vehicles (UAVs like drones) and Unmanned Ground Vehicles (UGV like turtlebot). Where the UGVs are able to guide the multiple UAVs while traveling from one point to another. Increasing navigation accuracy and reducing navigation time by 200%.
- Enhanced localization and navigation accuracy by incorporating machine learning functionality. Further reducing navigation time by 150%.

PROJECTS

Github: Harsh-B-Patel

Help Desk Application (**Node JS, Express JS, NoSQL, MongoDB**, **CSS, HTML,** Kali-linux)

- Developed a web based help desk chat application, with chat rooms, auto customer-admin assignment, admin authentication and many admin-only features that can be used to resolve customer's issues.
- Performed various penetration tests and static code analysis to discover potential vulnerabilities and exploits in the application. (Burp Suite, John The Ripper, Hydra, ZAP, SQL Injections, XSS Testing)
- Modified the application to patch various security exploits and vulnerabilities.

Road Network's Robustness (**NetworkX, Python**)

- Wrote a paper that studies the robustness and reliability of city's road networks as they undergo simulated traffic congestions. This paper also compares multiple cities and how different city planning methodologies affect local road networks.

Portfolio Website: https://harshdev.ca/

SKILLS & INTERESTS

- Proficient with Microsoft Office with advanced experience in MS Excel.
- **Languages**: Java, HTML5, CSS, JavaScript, C++, SQL, Python, jQuery, Git.
- **Interests**: Computer Technologies, Finance, Travel, Gaming.

EDUCATION

York University Toronto, ON

Hons. Bachelors of Sciences, Computer Science *September 2017 - April 2022*

Awards: Lassonde Undergraduate Research Award (2021) ($10,000) | Lassonde Undergraduate Research Award (2020) ($8,000) | GM Bursary for Students in Computer Science ($3,500) | Entrance Scholarship ($1000).