NIKHIL KHARBANDA

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GitHub: https://github.com/nikhil-kharbanda

SUMMARY

Innovative Full-stack Web Developer and Computer Systems Engineer, equipped with technical knowledge and problem-solving skills to design and develop responsive efficient web applications, APIs, servers, databases, and embedded systems.

TECHNICAL SKILLS

Languages: Java, JavaScript, HTML5, Python, React, C/C#/C++, CSS, SQL/NoSQL
Applications: GitHub, AutoCAD, Google Suite, MATLAB and Simulink
Tools: NodeJS, REST API's, router networking**,** npm
Others: PLC applications, Tele-communications, Satellite communications, VoIP

EDUCATION

Bootcamp Certificate – Full Stack Developer – Completed November 2021 with A+ grade
University of Toronto*,* Toronto, ON
A 24-week intensive program focused on gaining technical programming skills in HTML5, CSS3, JavaScript, JQuery, Bootstrap, Firebase, NodeJs, MySQL, MongoDB, Express, Handelbars.js & ReactJS.

Bachelor of Engineering - Computer Systems Engineering – Completed April 2021
Carleton University*,* Ottawa, Ontario
A 4-year program focusing on combining hardware and software to design and implement integrated computer systems for applications such as robotics, AI, aerospace, avionics systems, cloud computing.

DEVELOPER PROJECTS

NFTCOLLECT:

- ***GitHub Link:*** https://github.com/nikhil-kharbanda/UofT_NFTC
- ***Demo Link:*** https://nftc-collect.herokuapp.com/login
- Created an "Instagram" type application for users to share collectable NFT's
- Responsible to create routes and enhance security of the application *(users can only see content if they are logged in)*
- Built database with users' information and content
- **Tools:** JavaScript, HTML/CSS, SQL

DEVSPACE:

- ***GitHub Link****:* https://github.com/nikhil-kharbanda/UofT_DevSpace
- ***Demo Link:*** https://devspace-jnmst.herokuapp.com/
- Created chatrooms for developers to share projects for multi-disciplinary collaboration
- Created Firebase authentication for real-time chat functionality
- **Tools:** JavaScript, HTML/CSS, Firebase, NoSQL, Pusher

CRYPTO/STOCK TRACKER:

- ***GitHub Link****:* https://github.com/nikhil-kharbanda/UofT-Crypto_Proj1
- ***Demo Link:*** https://nikhil-kharbanda.github.io/UofT-Crypto_Proj1/
- Collaborated with team members to create stock and crypto tracker to display market trends
- Responsible for implementing the APIs to allow application to query the required information
- **Tools:** JavaScript, HTML/CSS

ENGINEERING DEVELOPMENT PROJECT

RASPBERRY PI MIRRAI – EMBEDDED SYSTEM ENGINEERING PROJECT (CAPSTONE PROJECT)

- Built Smart Mirror using Raspberry Pi Embedded System and Machine Learning algorithm
- Responsible for designing User Interface utilizing JavaScript and Python:
    - Provide daily events summary from Google Calendar
    - Propose Dress suggestions based on weather reports etc.
    - Touchscreen enabled Spotify Controller
- Assisted with the machine learning algorithm development using Python and Google Collab
- Responsible for applying for university funds and maintaining expenses within budget of $2000

AUTONOMOUS DRIVING & RECHARGING SYSTEM

- Upgraded an older Roomba with autonomous driving, including self-drive feature to an automated charging station
    - Attached ultrasonic / photoelectric sensors to Roomba
    - Programmed an Arduino for Roomba to sense and navigate around obstacles
    - Programmed second Arduino and a servo motor as part of charging station
    - Mechanical servo powered arm would lower and re-charge the on-board battery, once Roomba's presence confirmed within proximity of charging station

RELEVANT EXPERIENCE

Embedded Systems Engineer – Base Software Team April 2023 – Present
Stellantis (FCA) Auburn Hills, Michigan

- Perform reviews and inspections for requirements, design documents, C/C++ code and test plans
- Work with other engineering teams responsible for the development of software for engine and transmission control modules
- Made innovative tool changes allowing for global auto-generation and testing software

Key Accomplishments:

Tool changes

Objective: Created tool changes allowing for global automated testing and library definition compilation used by external teams.
Design: Developed a practical solution to allow all vehicle programs to compile and auto-test via software developed in C#.
Outcome: This innovative solution eliminated the need for any manual testing and changes in generated files

Project Manager / Engineering Intern (3 terms) May 2017/18/19 – August 2017/18/19
Canadian Broadcasting Corporation (CBC) Toronto, Ontario

- Assisted with various projects encompassing multiple departments
- Responsible for creating concept designs and block diagrams for client reviews
- Built project schedule, budget, and CAD drawing for client approval
- Tracked project progress closely to ensure projects are delivered within schedule and budget

Key Accomplishments:

Skype-Facetime System

Objective: Allow interoperability between news anchors using Skype and FaceTime video conferencing platforms, around the world and within CBC studios.
Design: Developed a practical solution to share both Skype and Facetime audio/video feeds using a building switcher router and broadcast simultaneously between the two news anchors
Outcome: This innovative solution eliminated the need for any initial call setups and significantly reduced the latency between the newsroom and remote anchors by 10%

ADDITIONAL EXPERIENCE

Computer Systems Councilor 2018 – 2019
Carleton Student Engineering Society Ottawa, Ontario

CERTIFICATIONS

- Completed "*Introduction to Databases*" and "*Advanced PC Network Security*" certifications from University of Waterloo
- Completed the "*Microsoft Azure AI-900"* certification course offered by University of Calgary

ADDITIONAL DETAILS – RASPBERRY PI MIRRAI

For my Capstone project in Engineering, I worked in a group of three to create a smart mirror (MirrAI) using a Raspberry Pi 4 Embedded System with a machine learning component.

The purpose of this project was to create a mirror that scanned the user's outfit and displayed images of similar outfits from the internet. In addition, the MirrAI also provided daily events summary from personal Google Calendar, proposed dress suggestions based on weather reports and offered Touchscreen enabled Spotify Controller.

System workflow:

a) The camera scans and detects the outfit, uses Python scripts to find similar images from Training Data
b) Uses Bing API to search the internet for images of similar outfits, returns 4 top results and stores in a temporary storage
c) JavaScript based UI scans the temporary storage and displays the results, one at a time as a slideshow preview
d) Users can hit the Refresh button to get additional suggestions from the internet

Project Demo