SHUBHAM SINGH

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EDUCATION

University of Liverpool   **Jan 2021 – Jan 2022**
Master of Science in Computer Science: Distinction (Predicted)   *Liverpool, UK*

Delhi Technological University   **Aug 2014 – May 2018**
Bachelor of Technology in Engineering Physics (Major in Electronics): First Class   *Delhi, India*

RELEVANT COURSEWORK

- Web Programming
- Applied Algorithmics
- Database Systems
- Safety & Dependability
- Data Mining
- Artificial Intelligence
- Machine Learning
- Research Methods

EXPERIENCE

Swansea University   **June 2017 – Jan 2020**
Research Assistant   *Swansea, UK*

- Implemented a multi-threaded, concurrent execution of signal strength read and switch functionality for an industry grade GPS. Utilised POSIX thread library in C. Achieved low-latency with 85% accuracy. Created a system GUI using GTK.
- Automated 3D simulation of high mesh count electromagnetic models using a Python API. Exported large data-set for adaptive optimisation and post-processing in MATLAB.
- Built an interface for a piezoelectric precision pump to drive liquid metal in micro-fluidic channels used in reconfigurable electronics. Designed a GUI using Tkinter library in Python.

PROJECTS

Chat Room Application | *React, NodeJS, Socket.io, Heroku*   **September 2021**

- Developed a simple real-time chat room application where users can create and join a chat room with other app users.
- Created a front-end UI with React with functionality to join a room, send messages and read messages from other users.
- Used NodeJS and Socket.io for the back-end application that handles user requests, message threads and chat sessions.
- Deployed the server-side application on the Heroku cloud service and the front-end application on Netlify hosting service.

GA and PSO optimised ANN | *Python, NumPy, Google Colaboratory*   **July 2021**

- Implemented a Artificial Neural Network (ANN) in Python using Backpropagation with various activation functions.
- Used the Artificial Neural Network to simulate different toy problems such as symmetry checking, XOR gate, etc.
- Used Genetic Algorithm and Particle Swarm Optimisation to optimise the better train the multi-layer network

Autonomous Underwater Vehicles - DTU | *C, NI LabView*   **Dec 2016 - Feb 2017**

- Worked on the acoustic signal processing unit, part of the navigation system in an indigenous underwater explorer.
- Implemented a band-pass filter on an high-sensitivity data acquisition module for 3-D localization of a sound source.

Unmanned Aerial Systems - DTU | *MATLAB, Python, ROS*   **Jul 2015 – Jul 2016**

- Integrated ROS on the UAV on-board computer and created an interface for critical processes such as the Flight Control System, Electric Propulsion System, Image Processing, Obstacle Detection and Avoidance System.
- Setup a local SFTP server on the UAV's on-board computer to achieve interoperability with a target remote server on the ground over a WLAN.
- Implemented an object size estimation feature in MTALAB using the attributes such as Geotags, Inertial Measurement Unit data and Altitude from the UAV.

TECHNICAL SKILLS

Languages: Python, JavaScript, C/C++, PHP, HTML/CSS, MySQL
Developer Tools: VS Code, Jupyter Notebook, GitHub
Technologies/Frameworks: Linux, Git, Django, React, NodeJS, Docker

HONORS & AWARDS

- MBDA 2-star European Innovation Award 2019 - Swansea University's Communication Systems Research Group bagged the prize in the 'Early Innovative Concept' category.
- WICED Build Hackathon 2015, organized by Broadcom limited - Winning prototype for project TravelSense represented Society of Robotics, Delhi Technological University.