SUMANT BAGRI

Masters Student (MScAC) @ University of Toronto

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HIGHLIGHTS

I am passionate about researching and implementing state-of-the-art deep learning techniques to solve complex, real-world problems in computer vision for robotics and healthcare and that is exactly what I hope to kickstart through this internship and pursue as a career in the future

EXPERIENCE

Trading Operations Engineer

Flow Traders Asia Pte. Ltd

Oct 2020 – Apr 2022 | Hong Kong, Hong Kong

- Manage, maintain and optimize all internal, software and hardware stacks largely integrated with the Linux kernel
- Work with development to build and test exchange APIs for different APAC markets
- Implement automated ops-engines and relevant monitoring tools improving control and enabling streamlined deliveries

RESEARCH/ACADEMIC PROJECTS

Comparison of Sampling-Based Path Planners

Dec 2022 | UofT, Canada

- Performed a comparative study of three asymptotically optimal, sampling-based path-planners - FMT*, BIT* and NRRT* algorithms. Evaluated optimal path costs, execution times as well as success rates through simulations on characteristically different 2D maps with varying sample counts

Synthetic Image Generation of Brain Tumor MRI Scans

Nov 2022 | UofT, Canada

- Implemented three different GAN architectures - DCGAN, WGAN and UNet-GAN - for synthetic image generation using PyTorch. Trained a CNN model for brain-tumor classification using synthetic images which achieved 90% accuracy on real images

Capturing Cutting Tool Failure in Micro-Milling

Sep 2019 – Aug 2020 | IIT Bombay, India

- Developed an image processing pipeline to extract tool-wear data from captured tool images. Modelled and tuned ANN and DBN to classify and predict tool-wear and end-of-tool-life based on force and vibration data

Autonomous Navigation and Obstacle Avoidance Robot

Oct 2018 | UofT, Canada

- Implemented a depth first search (DFS) path planning algorithm in C++ for self-localization of robot. Enabled optimal collision detection using 8 ultrasonic sensors and implemented PID control for obstacle avoidance

EDUCATION

MSc, Applied Computing

University of Toronto, Department of Computer Science

Toronto, Sept 2022 – December 2023*

Courses : Introduction to Machine Learning, Introduction to Mobile Robotics, Computational Imaging, Visual and Mobile Computing Systems, Neural Networks and Deep Learning

B.Tech and M.Tech, Mechanical Engineering

IIT Bombay

India, Aug 2015 – Aug 2020

Minor in Electrical Engineering

PUBLICATIONS

Journal Articles

- Bagri, S., Manwar, A., Varghese, A., Mujumdar, S., & Joshi, S. S. (2021). Tool wear and remaining useful life prediction in micro-milling along complex tool paths using neural networks. *Journal of Manufacturing Processes*, *71*, 679–698.

PROFESSIONAL SKILLS

Programming Languages: C/C++ | Python
Robotics/CV: ROS | Gazebo | OpenCV
Machine Learning: PyTorch | TensorFlow
Cloud Computing: Kubernetes | Docker
Distributed Computing: Hadoop | Disco
Data Streaming: Kafka | ELK Stack
Databases: BigQuery | PostgreSQL | MariaDB