# Tanmay Bishnoi

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## Education

**Toronto Metropolitan University (TMU)** Toronto, ON
*Bachelor of Engineering in Electrical Engineering* *Aug. 2019 – Exp Aug. 2025*

- Dean's List

## Professional Experience

**Project Developer - Machine Learning** Jan 2023 – Present
*UofT Machine Intelligence Student Team (UTMIST), UofT* *Toronto, ON*

- Researching ML solutions for wind turbine audibility and noise contamination project for Aercoustics Ltd.
- Assisting with audio data preprocessing, exploratory data analysis, and audio classification literature reviews
- Analysing and Reporting model performance with evaluation metrics and interpretability techniques

**Undergraduate Research Assistant - Drone Navigation** Aug 2022 – Jan 2023
*AVL (Autonomous Vehicles Lab), TMU* *Toronto, ON*

- Researched a graph-based SLAM algorithm for aerial drones under the supervision of Dr. Reza Faeighi
- Implemented indoor 3D mapping on aerial drone testbed and researched object collision avoidance algorithms
- Developed software tools in Qt and C++ for research, testing, and development of drone sub-systems

**Machine Learning Research Student** July 2022 – Aug 2022
*Neuromatch Academy* *Toronto, ON*

- Studied deep learning fundamentals such as Neural Networks, Optimisation and Regularization
- Developed ML pipeline for detection and localisation of screws using Yolov3 and explored robotic arm control algorithms for sorting screws into categories under supervision of Dr. Subhrasankar Chatterjee (IIT-KGP)

**Software Team Lead - Autonomy** Feb. 2022 – Present
*R3 Robotics at TMU* *Toronto, ON*

- Developed full-stack autonomy software in Python and ROS2 for Mars Rover
- Implemented ML pipeline for visual autonomy and pointcloud-based obstacle avoidance using Zed cameras
- Achieved <2m accuracy for point-to-point robust autonomous traversal on wide range of terrains
- Secured position in top 5% at the prestigious University Rover Competition (URC) held at MDRS, Utah, USA
- Mentored team members on goal-setting and problem solving and contributed 8K+ lines of code via Git

## Projects

**Histopathologic Cancer Detection** | *Scikit-learn, Pytorch* Nov 2022 – Nov 2022

- Developed CNN model to detect cancer using dataset of 220k histopathological images of tissue samples
- Employed knowledge of image analysis, data pre-processing, regularization and model design techniques
- Achieved validation accuracy of 85.75% on training using 2200 images (10%) of available training data

**Computational Neuroscience Capstone Project** | *SciPy, PyTorch* June 2021 – July 2021

- Supervised by Dr. Matthew Krauss (McGill University) for capstone project titled "Feedforward Functional Hierarchy of Information Processing in the Mouse Brain during a Sensorimotor Task"
- Researched Computational and Statistical techniques in Neuroscience contexts for >160 hours
- Presented project virtually at the Neuromatch Academy Computational Neuroscience 2021 capstone meet

## Technical Skills

**Languages**: Assembly, C/C++, HTML/CSS, JavaScript, Python, R
**Frameworks**: Gstreamer, Node, PyTorch, Qt, React, ROS2, TensorFlow
**Libraries**: D3.js, Matplotlib, NumPy, OpenCV, Pandas, Plotly, SciPy, Tkinter
**Tools & technologies**: CMake, CUDA, Docker, Git, Linux/UNIX, Virtual Machines
**Hardwares & Interfaces**: ARM, CAN, CSI, DSI, I2C I2S