TIANSHU KUAI

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EDUCATION

University of Toronto   Sept. 2017 - Apr. 2022
BASc Engineering Science - Robotics Major , Artificial Intelligence Minor 2022
Cumulative GPA: 3.77/4.0
Dean's Honours List for all Academic Semesters

SKILLS

PROGRAMMING SKILLS: Python, C/C++, Pytorch, TensorFlow, ONNX, MATLAB, PostgreSQL, ROS, Verilog, Assembly, Git, Latex
LANGUAGES: English, Mandarin

EXPERIENCE

Toronto Robotics and Artificial Intelligence Laboratory, *Undergraduate Research Assistant*   May 2021 - Current
• Thesis on improving feature learning processes for more robust feature extraction and more accurate bounding box refinement for 3D Object Detectors supervised by Prof. Steven Waslander
• Research on LiDAR point clouds 3D Object Detection Models

aUToronto, *Computer Vision Engineer*   July 2021 - Current
• Research on efficient 3D perception algorithms and models
• Worked collaboratively on deploying real-time perception models on autonomous vehicles

Qualcomm, *Machine Learning Research Intern*   May 2020 - May 2021
• Research on Audio related deep learning models
• Research on state-of-the-art methods for Neural Network Compression
• Building conversion pipelines between different ML frameworks such as Pytorch, ONNX, TF, TF LITE
• Working on NPU software compiler pipeline development

University of Toronto, *Undergraduate Research Assistant*   May 2019 - Sept. 2019
• Research on Early Relapse Detection in Youth Depression using Machine Learning Models supervised by Prof. Deepa Kundur
• Worked on patients' data processing and imputations
• Developed preliminary pipeline to track patients' facial expressions for facial behaviour analysis

PROJECTS

Deep Learning Based COVID-19 Diagnosis Tool   July 2020 - Aug. 2020
• A finetuned ResNet18 for COVID-19 diagnosis based on Lung CT scan
• Finetuned U-net for labelling the infection area on raw CT scan for COVID-19 Positive patients
• Great potential to be a commercial software product for hospitals where COVID-19 Test Kits are unavailable

Real Time Audio Denoiser   Aug. 2020 - Current
• A deep learning model with a symmetric encoder-decoder architecture built using convolutional layers and skip connections
• Model taking in Short-Time Fourier Transform (STFT) of the noisy signal as input, and producing the clean signal's STFT, which can be converted back to waveform as the final output
• Achieved good performance on various types of noise while maintaining the number of parameters small (~33K)

Autonomous Ball Dispensing Mobile Machine   Jan. 2019 - Apr. 2019
• Started from literature, market, and idea survey, through professional engineering decision-making tools to successfully converge to a fully autonomous ball dispensing machine prototype
• The prototype uses PIC18F4620 with MPLAB X and Arduino Nano to enable movement, real-time clock, user Interface, and IR Remote Control.
• This prototyped product can potentially be used for automatic delivery and dispensing in warehouses as well as other related industries

AWARDS

University of Toronto Engineering [K]Competition (UTEK)   Jan. 2020
Awarded second prize in senior design competition of UTEK2020

NSERC Undergraduate Student Research Award (NSERC-USRA)   Apr. 2019
Awarded to undergraduate science and engineering students based on research aptitude

University of Toronto Excellence Award (UTEA)   Mar. 2019
Awarded to University of Toronto students based on research aptitude