Benedek Hegedus

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Languages**: Python, C++, Assembly, SysVerilog**

Research interests**: Spiking Neural Networks, Active Inference, Spectral Graph Theory**

EDUCATION

The University of British Columbia Vancouver, BC

Bachelor of Applied Science in Integrated Engineering *Sep* 2016 – Dec 2021

Specialized in Electrical and Computer Engineering

EXPERIENCE

Huawei Technologies Vancouver, Canada

AI researcher Co-op in Computer Vision ***(Python, C++, Linux)*** Jan 2020 – September 2020

- Convert models from TensorFlow and PyTorch to run on Atlas200DK board by using equivalent models with different operators. Models include OpenPose based keypoint detection and Transformer based language model.
- Create Hand Gesture Controlled RC Car open source project to showcase hardware connections with Atlas200DK.
- Create Sign Language Translation sample project on Atlas200DK by pipelining together 5 deep learning models and multiple stages of processing.
- Review SOTA research papers in Computer Vision and AI to understand trends in model architectures.
- Implement Python based Atlas200DK projects in C++ to optimize inference, pre-processing and post-processing time.

Laser Zentrum Hannover e.V Hannover, Germany

Machine learning ***(Python)*** *– intern* May 2019 – Dec 2019

- Built a dynamic data acquisition and camera calibration program that fully automated the data collection process. This was a significant improvement as the data was previously collected manually.
- Integrated the data acquisition system with a live post-processing algorithm. This reduced the size of saved frames from 4mb to 2kb while maintaining useful information.
- Pre-processed different types of data to be ready for ML classification using NumPy and Torch.
- Used PyTorch and Keras to create neural networks for classification.
- Implemented a custom Recurrent-CNN in PyTorch (for video classification) and achieved a classification accuracy (4 classes) of 77%. The previous best was 37%.

NOTABLE ACHIEVEMENTS

Hockey Dangling Robot - 3rd year industry night winning project Vancouver, BC

Controls and computer vision **(C/C++).** Sep 2018 – May 2019

- Coded an automatic hockey dangling robot using an Arduino that was able to beat intermediate players.
- Used OpenCV and PixyCam module for computer vision (fast paced color based object tracking).
- Implemented a PID controller and optimized it for response time and overshoot
- Implemented a puck position prediction algorithm (based on kinematics)
- Implemented different checks(pokes, sweeps) to be performed in an unpredictable manner.