

Benedek Hegedus

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Portfolio: <https://www.benihegedus.com>

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 Computer and Electrical 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.
- ◆ Pipeline multiple deep learning models to implemented embedded version of computer vision application.
- ◆ 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.