BEN (DAPU) WANG

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EDUCATION

University of Pennsylvania - Rising Senior *Sep 2018 - Present*
Jerome Fisher Program in Management and Technology *GPA: 3.63*
BS. Electrical Engineering and BS. Economics at Wharton School of Business

EXPERIENCE

EleutherAI: AI Research Group March 2020 - Present
Researcher/Engineer *Skills: JAX/TensorFlow/Python, Large Model Engineering/Optimizations*
- Implemented model parallel transformer training framework using JAX and Google Cloud TPU pods. Achieves 61% of peak theoretical performance with data movement and model structure optimizations. Trained 6B parameter GPT model to completion while achieving similar downstream performance to GPT-3 models of similar size in 4 weeks with a TPU v3-256.
- Prototyping novel model parallel training method using pipelined, weight stationary reversible networks to reduce interconnect bandwidth by 15x, while operating over heterogeneous and preemptible nodes.
- Constructed large (10B+ parameter) models on Google TPUs Pods using Mesh TensorFlow for autoregressive language modelling

Formula SAE Electric Racing Team: Penn Electric Racing Oct 2018 - Present
Autonomous Perception Lead *Skills: Embedded C++, Computer Vision, PyTorch, Machine Learning*
- Designed 480 frame per second, quad camera perception pipeline utilizing convolutional neural networks and multi-perspective and point algorithms for autonomous racing competition using award winning 4 wheel drive electric vehicle
- Built and trained custom CNN based on anchor-free methods for single pass object and pose detection with extensive use of data augmentation, self distillation and synthetic data to achieve state of the art results with limited labeled data
- Achieved 50ms end to end perception system latency, with 25cm cone localization accuracy up to a range of 25m

ODrive Robotics: High Performance Motion Control March 2019 - August 2019
Firmware Engineer *Skills: C++/Python, High performance stream processing*
- Implemented software(Python)/firmware(C++) performance improvements which reduced USB connection latency by 10x
- Implemented high frequency (48kHz) data collection and graphing system with real time latency requirements

Althea: Blockchain Incentivized Mesh Networking Jan 2018 - Sep 2018
Software Engineer *Skills: Rust, Blockchain, Linux Networking*
- Wrote and maintained mesh connection negotiation (Wireguard), blockchain authentication and billing software now deployed to hundreds of OpenWRT routers in 5 countries, providing competitive low cost internet service to underserved communities
- Implemented MVP of bidirectional blockchain (Ethereum) payment channel client using actor based asynchronous architecture in Rust, including cryptographic commitments routines and UDP based networking layer

PATENTS/PUBLICATIONS

LFTag: A Scalable Visual Fiducial System with Low Spatial Frequency Published Sep 2020
IEEE CVIV (Computer Vision, Image and Virtualization), best oral presentation *DOI: 10.1109/CTISC49998.2020.00030*

Field Configurable Electrical Routing Matrix for Electronic Prototyping Granted Nov 2015
Australian Innovation Patent: AU2015101706

Chair Mounted Optical Posture Sensor Granted Mar 2016
Australian Innovation Patent: AU2016100723

COMMERCIALIZED PRODUCTS

Perf+: Compact and Efficient Electronic Prototyping Board May 2015 - Present
Inventor: Hardware Crowdfunding Project *Skills: Project Management, Outsourcing*
- Used Kickstarter and Crowd Supply to raise $25,000 from 832 backers for development and volume manufacturing
- Over 15,000 boards were manufactured in Shenzhen and all rewards fulfilled ahead of schedule to positive user reception

RemoteBoot: Remote Management module for Desktop Computers Nov 2015 - Present
Inventor: Hardware/Software Crowdfunding Project *Skills: ESP8266, C/C++, HTML, JS*
- Raised AU$17,589 from 431 backers for manufacturing and further development, with all rewards fulfilled to positive reception
- Deployed over 1000 devices worldwide, which have saved over 500MWh, reducing CO_2 emissions by over 350 tons

TECHNICAL STRENGTHS

Programming Languages	Python, Rust, C/C++, HTML, JavaScript, Java
Software & Tools	Linux, TensorFlow, PyTorch, Numpy, FreeRTOS, TensorRT