










## Objective

- Proven embedded systems engineer looking to transition into Machine Learning in process and business automation, utilizing CV, NLP or DL. End-to-end skills in problem specification, system design, ethical considerations, data collection and wrangling, modeling, evaluation, deployment and monitoring.




## Certifications

- **FourthBrain:** Machine Learning Engineer  • **TensorFlow.org:** TensorFlow Developer 
- **AWS (Certified ...):**
  - Machine Learning Specialty 
  - Solutions Architect 
  - Cloud Practitioner 
- **DeepLearning.AI (Specializations):**
  - Deep Learning 
  - TensorFlow Developer 
  - TensorFlow Advanced Techniques 

## Education

- **UC Berkeley:** B.S. Electrical Engineering and Computer Science 

## Projects

- **Domain Fine-Tuned, GPT-2 Auto-Completion Text Editor:** A context (2022 Russia-Ukraine War) fine-tuned, causal language-model editor (PoC) for journalists who have to report from the field under difficult conditions and time pressures. Training corpus scraped using APIs. Writers need only type ~40% of the words they otherwise would have to. [Hugging Face, Spacy, Curses, NYT API] 
- **Semi-Supervised Methods on Medical Datasets:** Fully supervised approaches need large, densely annotated datasets. Utilize Self and Semi-Supervised Learning with Knowledge Distillation on pediatric pneumonia X-Rays to significantly reduce the need for fully labeled data. REST API Web-App container deployed on GCP Cloud Run. [TensorFlow, SimCLR, FixMatch, FastAPI, Bootstrap, Docker] 
- **Identifying Cancer using Computational Histopathology:** Evaluate different machine-learning algorithms for identifying metastatic cancer in small image patches taken from larger digital pathology scans. Investigate how traditional hand-engineered Computer Vision features compare against Deep Learning's automatic feature-extraction. [SK-Learn, SK-Image, TensorFlow, Dask, TPOT, PyOD] 

## Experience

- **Machine Learning Student (+ Self-Study) : FourthBrain (CA) , 08/2021 – Present**
  - Andrew Ng's AI Fund backed 16-wk bootcamp for students with a professional software background. Engineers apply machine learning and deep learning methods with the goal of deploying end-to-end, scalable and production-ready solutions. Projects vetted by subject-matter experts.
  - Working in a 3-persons team, our CV/DL capstone project won a FourthBrain Top Project Award.
- **Embedded Systems Engineer : Kernel (CA) , 07/2020 – 08/2021**
  - Co-designed embedded platform for world's first wearable full-head TD-fNIRS (Time-Domain functional Near-IR Spectroscopy) brain neuroimaging appliance. Miniaturize from rack-mounted to head-mounted system. Validated power delivery and data aggregation pipelines. Wrote bringup, diagnostics and production testing firmware. Semiconductor supply-chain risk planning and mitigation.

- **Principal Hardware Engineer : Quanergy (CA) , 09/2018 – 06/2020**
  - Complete redesign of next-gen solid-state LiDAR sensor for reliability, cost and form-factor. Redesign and characterization of ultra-short pulsed laser-driver with improved performance. Support new silicon bring-up. Maintain and improve Python/PyQt tools for optoelectronics calibration, data visualization, test automation and data-collection. Develop new algorithms for weak-signal detection.
- **Systems Hardware Engineer : Google (CA) , 08/2017 – 05/2018**
  - Lead-EE on Stadia wireless streaming game-controller. Designed for cost, latency and low-power, fully-functional from first build. Developed ambient color sensor for Nest Hub smart-display assistant.
- **Principal Hardware Engr. / Firmware Engr : GoPro (CA) , 02/2012 – 06/2017**
  - API design and coding of Java Aerial SDK for direct control of UAV via smartphone. Launched Camera Hardware SDK for direct control of GoPro cameras by third-party integrators.
  - Lead-EE on Karma (GoPro's first UAV), and three generations of Hero digital cameras. 3rd EE hired at GoPro. End-to-end CE product development cycle – Architecture and hardware/firmware-interface specification, components selection, schematics and layout, prototyping, performance evaluation, flight and safety testing, design validation, test plan, compliance certification and yield improvement. EE / ME / FW integration and troubleshooting, ODM liaison, DFM / BOM / ECO reviews.
- **Sr. Hardware Engineer : NaturalPoint (OR) , 01/2008 – 11/2011**
  - Responsible for board hardware, firmware and FPGA (Altera Cyclone & Xilinx Spartan) design of USB and Ethernet(PoE) connected IR Motion-Capture camera systems. Complete product line refresh and new products introduction. Develop digital video-processing algorithms and custom IP in Verilog.

## **ML Skills**

- **Libraries:** TensorFlow, Keras, PyTorch, Hugging Face, Spacy, OpenCV, SK-Learn, SK-Image, SciPy, Numpy, Pandas, Matplotlib, HDF5, TFRecord, BS4, FastAPI, Pydantic
- **Concepts:** Loss-Funcs, Metrics, Bias / Variance, Regularization, Backpropagation, Gradient Descent, Optimizers, Skip-Conn / Chain-Rule, Feature Engr, Dimensionality Reduction, HP Tuning, Ensembling, Self-Supervised Learning, Distillation, Attention, Error / Ceiling Analysis, Transfer Learning, Ethical AI
- **ML:** LinR / LogR, SVM, Bagging / Boosting, Anomaly Detection, Clustering, Label-Prop, Zero-Shot
- **Sequence Models:** RNN, LSTM, WaveNet, Transformers, Language Models, Beam Search, Sampling
- **Vision Models:** CNN, GAN, U-Net, YOLO, ResNet, Siamese Net, Feat Extractors, Autoencoders
- **NLP:** Token'tion, TF-IDF, Word2Vec, Embeddings, Lemma'tion, Normal'tion, NER, Similarity Search
- **CV:** Point / Morph / LSIS Ops, Moments, Hist EQ / Otsu, NLM, Non- / Linear Filters, Noise-Est / Weiner, Edge / Line & Shape (Hough) / Corner Detection, LBP / HOG / Haar / SIFT Features, Snakes / Boundaries, Segmentation / GrabCut, Compress Sense / Sparse Repr, DCT / Coding / Quantization

## **CS Skills**

- **Languages:** Python, SQL (basics), Java, C, Assembly
- ISRs, Concurrency, Object-Oriented Programming, Data Structures, Design Patterns, Version Control
- Embedded Systems SDKs (e.g. STM32CubeMX), Multithreaded RTOS (e.g. FreeRTOS), Android Development, Networking Protocols (e.g. 802.3, ARP, DHCP, IP, UDP, TCP, HTTP)

## **Publications**

- Feature Engineering for Machine Learning: [Part I](#) – Data Preprocessing, [Part II](#) – Feature Generation