Charles Yang

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EDUCATION

University of California, Berkeley –Masters in EECS   08/2020 – 05/2021

Concentration: Computer Vision and Artificial Intelligence

Thesis: [Detecting Backdoored Neural Networks with Structured Adversarial Attacks](#)

University of California, Berkeley – Undergraduate   08/2017 – 08/2020

Major: Electrical Engineering and Computer Science (EECS) Honor Degree

Minor: Material Science and Engineering

GPA: 3.80, with Honors

SELECTED PUBLICATIONS

Policy Memos

Matthew Daniels, Autumn Toney, Melissa Flagg, **Charles Yang. "**Machine Intelligence for Scientific Discovery and Engineering Invention". **Center for Security and Emerging Technology at Georgetown** (2021). https://cset.georgetown.edu/publication/machine-intelligence-for-scientific-discovery-and-engineering-invention/

Yang, C. "Building Back with a Cleaner Power Grid for America". **Day One Project** (2021). https://www.dayoneproject.org/post/building-back-with-a-cleaner-power-grid-for-america

Journal Articles

Charles Yang, Youngsoo Kim, Seunghwa Ryu, Grace Gu. "Prediction of composite microstructure stress-strain curves using convolutional neural networks". **Materials and Design** 189, (2020). https://doi.org/10.1016/j.matdes.2020.108509

Yongtae Kim, Youngsoo Kim, **Charles Yang**, et al. "Deep learning framework for material design space exploration using active transfer learning and data augmentation". **npj Comput Mater** 7, 140 (2021). https://doi.org/10.1038/s41524-021-00609-2

WORK EXPERIENCE

Climate Consultant – Actuate Innovation   10/2021 – Present

- Helped develop multi-million dollar climate programs in areas like carbon removal and mass timber supply chain development.
- Worked alongside ex-DARPA leaders to identify system-level blockers for climate change progress

Machine Learning Engineer – SambaNova Systems   09/2021 – Present

- Implemented deep learning models on custom hardware chips, with a focus on time series models
- Coordinated multifunctional teams across compiler teams to meet urgent customer delivery requests
- Clearly presented business cases and model results to executive teams

TechToMarket Commercialization Fellow at ARPA-E 06/2021 – 09/2021

- Served as fellow on the ARPA-E DIFFERENTIATE program, focusing on outlining commercialization and technology scaling plans for AI technologies in the energy sector
- Conducted a deep-dive into quantum computing technology, compare-and-contrast with AI applications and presented program recommendations to T2M team

Machine Learning Intern at Pure Storage 06/2020 – 08/2020

- Developed novel time-series characterization methods for unsupervised anomaly detection
- Created parallelized models on CPU clusters to improve data processing and model training speed by factor of 50

Machine Learning Intern at Aerospace Corporation 05/2018 – 01/2019

- Applied Machine Learning to additive manufacturing characterization to streamline industrial manufacturing pipeline
- Utilized Long Short-Term Memory (LSTM) neural networks for time-series anomaly detection from satellite telemetry
- Developed an in-house Deep Learning course using Jupyter Notebooks with a focus on domain relevant datasets

R&D Intern at Heliotrope Technologies 10/2017 – 09/2018

- Implemented full-stack data management pipeline with SQL and Python
- Designed device controller using shallow Neural Network, implemented in embedded firmware
- Automated pilot-scale manufacturing defect detection using image processing and Neural Networks

RESEARCH

Masters Student at the Mahoney Group in RISElab at UC Berkeley 02/2020 – 05/2021

- Explored dynamical systems perspective for training stable recurrent neural networks
- Collaborated with interdisciplinary group on detecting backdoored deep learning model under an IARPA competition

Undergraduate Researcher at Lawrence Berkeley National Lab 12/2018 – 06/2021

- Applied Convolutional Neural Networks (CNN) to predict optical properties of nanoparticles, adapted to take 3D mesh geometries as inputs
- Used Random Forests for inverse design and explainable machine learning
- Collaborated with a multidisciplinary team of staff scientists working on an ARPA-E funded grant project

Undergraduate Researcher at the Gu Group at UC Berkeley 10/2018 – 06/2021

- Developed Convolutional Neural Networks to predict material properties based on unit cell geometry, automating traditional Finite Element Method (FEM)