
CHARLES YANG

Education

University of California, Berkeley 2017-Present

Major: Material Science and Engineering & Electrical Engineering and Computer Science

Member of Tau Beta Pi Engineering Honor Society

GPA: 3.80

Awards

Winner of Berkeley College of Engineering Research Poster Symposium 2019

Clinton Global Initiative University 2018 Cohort 2018

MIT/UN Climate Co-Lab Popular Vote Winner 2018

UC Berkeley Dean's Honor List 2018

National Merit Scholarship Finalist 2017

Research Experience

- **2018-Present – Research Intern at Lawrence Berkeley Lab:** Applied convolutional neural networks to (1) optimize the neural network properties of nanoparticles using differential simplex layers applied to 3D meshes
- **2018-Present – Undergraduate Student Researcher at Gu Research Group at UC Berkeley Mechanical Engineering Department:** Used Random Forest, Support Vector Model, and Convolutional Neural Networks to (1) replace Finite Element Models with faster black-box models enabling higher throughput computation and design optimization.
- **2016-2017 – Dean's Early Research Fellow at Virginia Commonwealth University(VCU) Electrical and Computer Engineering Department:** Used MATLAB-based power grid simulations to (1) optimize power grid integration of photovoltaics i.e. location and size of installations, to minimize energy loss and (2) synthetically generate realistic wind power profiles to enable large-scale power grid modelling.
- **2016-2017 – Research Assistant at Virginia Commonwealth University(VCU) Mechanical and Nuclear Engineering Department:** Experienced in aerosol (spray tube furnace and electrospinning) and wet-chemistry synthesis methods and FTIR, XRD, and UV-Vis characterization techniques. Specialized in designing nanostructured Metal-Organic Framework(MOF) semiconductor

composites for photocatalysis applications. Independently researched porous carbon derivatives of MOF's.

- **Peer-Reviewed Publications**

1. "Using convolutional neural networks to predict composite properties beyond the elastic limit", C Yang, Y Kim, S Ryu, G Gu, *MRS Comm.* 1 (n.d.) 1-9
2. "Facile synthesis of ZnO@ ZIF core-shell nanofibers: crystal growth and gas adsorption.", X He, C Yang, D Wang, SE Gilliland III, DR Chen, WN Wang, *CrystEngComm* 19 (18), 2445-2450
3. "Sequential Optimal Placement of Distributed Photovoltaics using Downstream Power Index", MH Athari, C Yang, Z Wang, *2017 North American Power Symposium (NAPS)*

Work Experience

2018-2019 - Machine Learning Intern at Aerospace Corporation: Intern at the Data Science and Artificial Intelligence Division and **(1)** applied machine learning to novel non-destructive, in-situ, additive manufacturing characterization to replace expensive, destructive, diffraction-based methods, and **(2)** utilized neural networks to flag anomalies in time-series battery telemetry data streams from Aerospace cube satellites.

2017-2018 - R&D Intern at Heliotrope Technologies: Implemented novel machine learning techniques to improve workflow and control technologies. Specifically, **(1)** utilized deep-learning based device controllers for electrochromic devices, **(2)** automated defect detection in manufacturing-line coated electrodes, and **(3)** mapped expensive and space-limited characterization techniques to cheaper, scalable, characterization techniques.

Teaching

2017 – MCB 88 Connector Assistant: Served as connector assistant for the Data 8 Connector class MCB 88 – cancer immunotherapy. Assisted students during lab times, helped create lab exercises in jupyter notebooks, and held office hours. Designed Python for Data Science Tutorial for Data 8 students and served as Data Science peer consultant for Python and Machine Learning.

2016-2017 – National Science Honor Society(NSHS) Co-President: Organized science fairs for elementary and middle schools in underrepresented areas. Doubled NSHS membership and number of science fairs held.