Kevin Yang
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EXPERIENCE

Graduate Research Assistant, Professor Frances Arnold's Group
California Institute of Technology, Pasadena, CA (August 2014 - Present)

- Implemented Gaussian process models in Python (github.com/yangkky/gpmodel) and used them to design channelrhodopsins with improved properties
- Designed embedded representations of protein sequences based on doc2vec to streamline machine learning pipelines
- Built a neural machine translation model to predict signal peptides from their corresponding mature protein sequences

Computational Intern
Ambry Genetics, Aliso Viejo, CA (June 2017 – September 2017)

- Developed and implemented neural network models in Keras and PyTorch to predict outcomes of genetic variation by transferring information across paralogous proteins
- Incorporated model into a pipeline that finds paralogs for variants of interest and then uses paralogs and model to predict variant outcomes

Graduate Teaching Assistant
California Institute of Technology, Pasadena, CA
Introduction to Biomolecular Engineering (September – December 2016)
Undergraduate Kinetics (January – March 2016)

- Prepared and delivered lecture on machine learning for protein engineering
- Designed homework assignments aligned to lectures and goals for the course
- Coached students on preparation of a grant proposal and a *Nature*-style News and Views article
- Overall rating of Excellent (highest rating) on Teaching Quality Feedback Report

Physics and Math Teacher
Animo Inglewood Charter High School, Inglewood, CA (August 2011 – August 2014)

- Developed and implemented a novel curriculum for 9th grade physics and math
- Collaborated with educators across grade levels and subjects at a low-income, high-need school
- Founded and coached FIRST Robotics Team

SELECTED PUBLICATIONS AND PRESENTATIONS

- Bedbrook, C. N., **Yang, K. K.**, Rice, A. J., Gradinaru, V., Arnold, F.H. "Machine learning to design integral membrane channelrhodopsins for efficient eukaryotic expression and plasma membrane localization". *PLOS Comp. Bio.* 23 Oct 2017. doi.org/10.1371/journal.pcbi.1005786
- Bedbrook, C. N., Rice, A. J., **Yang, K. K.**, Ding, X., Chen, S., LeProust, E. M., Gradinaru, V., Arnold, F.H. Structure-guided SCHEMA recombination generates diverse chimeric channelrhodopsins. *PNAS.* 10 Mar 2017. doi/10.1073/pnas.170026911
- **Oral Presentation:** "Machine Learning to Predict Eukaryotic Expression and Plasma Membrane Localization of an Integral Membrane Protein." Proteins Gordon Research Seminar, Holderness, NH. 17 June 2017.

EDUCATION

California Institute of Technology, Pasadena, California (August 2014 – present)
PhD candidate in Chemical Engineering. Expected 2018 graduation.
Relevant coursework: Advanced Topics in Machine Learning; Introduction to Biomolecular Engineering; Machine Learning and Data Mining; Linear Algebra; Bioinformatics; Data Analysis for the Biological Sciences; Complex Analysis

The Ohio State University, Columbus, Ohio (Sept 2007 – June 2011)
B.S. in Chemical and Biomolecular Engineering; minor in Music

AWARDS AND ACHIEVEMENTS

- Chemistry and Chemical Engineering Teaching Assistantship Award (2017)
- Rosen Center Scholar Award (2016)
- Runner-up, Best Applications Poster, Southern California Machine Learning Symposium (2016)
- Caltech Biotechnology Leadership Program Trainee (2015 – present)
- NSF Research Experience for Educators (RET) scholarship (2013)
- NSF Graduate Research Fellowship (2011)