# Augustine George Chemparathy

agchempa@stanford.edu web.stanford.edu/~agchempa

## EDUCATION

**Stanford University**, Stanford, CA Sep 2015-Present

- B.S. with Distinction, Computer Science and Bioengineering, GPA: 4.067/4.00, Phi Beta Kappa
- M.S. candidate, Management Science & Engineering, Health Systems Modeling and Policy track
- Relevant coursework: Machine Learning (*CS 229*); Healthcare Operations Management (*MS&E 263*); Health Policy Modeling (*MS&E 292*); Deep Learning (*CS 230*)

## EXPERIENCE

**Software Experience:** Python, Matlab, Tableau, Javascript, React.js

**Qi Lab, Stanford Bioengineering, Computational Biology Research Assistant** September 2019-Present

- Used bioinformatic tools to search bacterial and archaeal genomes for novel DNA-cutting enzymes. These enzymes can provide an alternative to CRISPR-Cas for use in gene therapies.
- Developed a bioinformatic method to target a broad spectrum of RNA viruses with a minimal set of Cas13d guides. Created the website crispr-pacman.stanford.edu using the MERN stack to make antiviral guide sets available to the research community.
- ***Publications:***
  - "Development of CRISPR as a prophylactic strategy to combat novel coronavirus and influenza" Cell (2020).
  - "Computational Methods for Analysis of Large-Scale CRISPR Screens". Annual Review of Biomedical Data Science, Volume 3 (2020).
  - "A comprehensive analysis and resource to use CRISPR-Cas13 for broad-spectrum targeting of RNA viruses" (2020). In review.
  - "In vivo multiplexed gene activation via improved Cas12a" (2021). In review.

**CLABSI Data Analysis Team**, Stanford Children's Hospital March 2018-Present

- Designed and evaluated a electronic health record dashboard at Stanford Lucile Packard Children's Hospital to increase adherence to the central line-associated bloodstream infection (CLABSI) prevention bundle. In the 15 months after the dashboard was deployed, adherence to the entire CLABSI bundle across the hospital increased from 25% to 44%.
- ***Publications:***
  - "Development and implementation of a real-time bundle compliance dashboard for central line associated bloodstream infections." Upcoming publication in *Pediatric Quality and Safety*

**Dror Lab, Stanford Computer Science, Computational Biology Intern** June 2017-January 2020

- Developed a data analysis tool to gather insights from noncovalent interaction data from molecular dynamics (MD) simulations. Available at getcontacts.github.io.
- Optimized ComBind, a software package for ranking ligand docking poses. Used ligands that do not bind to an enzyme in order to improve pose ranking for ligands that bind to the enzyme.
- ***Publications:***
  - "Leveraging non-structural data to predict structures of protein-ligand complexes" (2020). In review.
  - "Uncovering patterns of atomic interactions in static and dynamic structures of proteins" (2019). In review. Available as BioArXiv pre-print.

**Arbor Biotechnologies, SWE Intern** June 2019-September 2019

- Identified novel CRISPR/Cas proteins using Arbor's metagenomic database. Developed a machine learning model to predict which computational hits were most likely to function as biologically active CRISPR effectors.

## ACTIVITIES

**Volunteer Organizer** July 2018-Present

I organize Stanford students to cook and serve breakfast at the Palo Alto Opportunity Center, a transitional shelter for the homeless in the Palo Alto community.

**Co-President, Stanford Students in Biodesign (SSB)** May 2017-June 2019

Coordinate recruitment, activities, and club organization for Stanford's largest undergraduate organization for interdisciplinary biosciences.

**Writing Tutor, Stanford Hume Center for Writing And Speaking** Sept 2016-June 2019

Assist undergraduate and graduate students at Stanford with all stages of the writing process for conference publications, theses, term papers, applications, and other academic writing pieces.

**Teaching Assistant, Linear Dynamical Systems (EE 263), Stanford University** Sept 2017-Dec 2017

Held office hours, wrote midterm problems, and graded exams for 135 students in Stanford's highest-enrollment electrical engineering course.

## HONORS AND AWARDS

- Phi Beta Kappa 2019
- Frederick E. Terman Scholastic Award, awarded to Top 30 seniors of Stanford Engineering 2019
- President's Award for Academic Excellence, Top 5% of Stanford Class of 2019 by GPA 2017
- Intel Science Talent Search Finalist 2015
- Davidson Fellow for Science 2015
- US National Chemistry Olympiad High Honors (Top 50) 2015
- USA Biology Olympiad National Certificate of Achievement (Top 56) 2014
- USA Junior Mathematics Olympiad Qualifier 2013