Zach Siegel

Data Science | Software Engineering

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Passionate about optimization, automation, and statistics-driven decision-making.
Highly proficient with a variety of full-stack application development tools that bring analysis to life.
Eager to grow; working to continue to have a high impact in increasingly complex environments.

Education

University of California, Los Angeles *MS - Operations Management.* GPA 3.94 — *2019-2021*

Pomona College *BA - Mathematics, Computer Science minor.* GPA 3.63 — *2010-2014*

Professional Experience

Software Engineer *Capsida Biotherapeutics, Inc.* — *2022 - Present*

Launched a widely-used internal website, onboarded and trained contributors. Developed a full-stack web platform for customized BI analyses; pipeline for long-running bioinformatics calculations; IP-related data mining; scheduling automation and visualization; automated handoffs; cross-platform syncing; integrations with lab robots; primate immunogenicity forecasting.

MBA Teaching Assistant *Anderson School of Management, UCLA* — *2020 - 2021*

Taught "Data and Analytics" to students in the full-time and fully-employed MBA programs as part of PhD teaching requirements.

Sinai Temple *Freelance software development* — *2018, 2019*

Automated and optimized scheduling Bar/Bar Mitzvah dates for ~130 students via mixed-integer linear programming.

GroupThere *Freelance software development* — *2017 - 2021*

Launched a carpool optimization tool at grouptherenow.com. Minimizes total drive-time sum across groups of 2-100. Configured for organizations. "Bee Swarm for Cars".

LA Community Action Network *Freelance software development* — *2017*

Re-implemented LAPD's "hotspot"-generation algorithm. Compared hotspots to historical arrest, citation, and crime report data from the City of Los Angeles. Contributed results the community-generated report "Predictive Policing in Los Angeles".

FactoryOfEverything *Freelance software development* — *2016 - 2017*

Developed a model for purchasing, production, shipping, and holding over a factory-warehouse-retail system. Forecasting using classical signal processing, regression, and machine learning. Implemented MVP in MATLAB.

Mathematics Tutor *Tutor Me LA* — *2016 - 2019*

Provided private tutoring for undergraduate UCLA students as part of the UCLA Guardian Scholars scholarship.

Computer Science Instructor *PlanetBravo* — *2018*

Taught introductory and intermediate computer science courses for young children.

Tutor for Incarcerated Youth *M&I Education Consulting* — *2015 - 2018*

Provided Math and CS tutoring for incarcerated and foster youth in El Monte and Long Beach, CA.

Research

Pandemic Mitigation Optimization *Anderson School of Management, UCLA* — *2021*

Optimizes decisions that affect compartment flow parameters in discrete-time SIRD disease progression model.

Fairness, Efficiency, and Feature-Awareness *Anderson School of Management, UCLA* — *2020*

Extends strategies for algorithmic fairness from the machine learning community to a resource-allocation optimization setting.

Generative Models and Sparse Coding *Department of Mathematics, Pomona College* — *2014*

Formalizes connections between the Boltzmann Machine Distribution and unsupervised learning based on sparse coding.

Anomaly Detection Using Dictionary Learning *University of Minnesota, Minneapolis* — *2013*

Explores unsupervised anomaly detection in video data using dictionary learning and sparse coding. An NSF-funded REU.

Aquatic Insect Populations' Response To Time-Varying Reproductive Rates *Oregon State University* — *2012*

Modeled insect populations in MATLAB using partial differential equations. An NSF-funded REU.

Zero-Sum Flows of the Linear Lattice *Department of Mathematics, Pomona College* — *2012*

Proved conditions for bounds on network flows in a generalization of the boolean lattice

Favorite Tools (🔥 expert)

Web - Python	· 🔥 Django · 🔥 Flask · Plotly Dash	*Database*	· 🔥 SQL · Pandas · Spark · Redis	*Communication*	· 🔥 LaTeX · Jupyter · Markdown
Web - JS	· 🔥 React · NextJS · Angular	*Optimization*	· 🔥 Pyomo · COIN-OR · GUROBI	*Fun*	· Bouldering · 🔥 Sourdough Bread

Honors

Outstanding Presentation Award *Joint Mathematics Meeting, Baltimore, MD* — *2014*

Llewellyn Bixby Mathematics Prize *Department of Mathematics, Pomona College* — *2012*