Sebastian **Bernasek**

Data Scientist | Computational Researcher

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Overview

Data scientist with proven success in building models to understand and predict the behavior of complex systems, as evidenced by several academic publications and granted patents. Brings a unique blend of scientific literacy, mathematical fluency, engineering pragmatism, and technical creativity, all backed by strong python scripting skills and a healthy dose of common sense. Recently concluded 5 years of academic research preceded by 3 years working at a midstage startup, and is now seeking new opportunities to continue learning while contributing to something fun.

Expertise includes:

- **Developing useful models** to analyze and simulate complex processes.
- **Empowering decisions with quantitative insight** backed by rigorous analysis.
- **Building rich data sets** by turning qualitative observations into quantitative measurements.
- **Hacking together data-driven solutions** to a wide variety of everyday problems.
- **Identifying and prototyping state of the art methods** derived from the research literature.
- **Collaborating with multidisciplinary teams** to coordinate multifaceted R&D efforts.
- **Bridging the gap between research, engineering, and business** by emphasizing broader implications of technical nuance.

Education

Ph.D. in Chemical and Biological Engineering *Northwestern University* 2014 - 2019

- Dissertation combined data science and chemical engineering to explore how cells make reliable decisions.

B.S. in Chemical Engineering • High Honors *University of California, Santa Barbara* 2008 - 2012

Experience

Consulting (while traveling!) Present

- Built a database of 5k+ targeted B2B sales leads using a combination of web-scraping, commercial APIs, and machine learning.
- Provided data-driven insight that enabled a recruiting firm to boost their monthly revenue by focusing on more probable hires.
- Automated several text content extraction and parsing routines to save hundreds of hours of tedious labor.

Researcher at Northwestern University *Evanston, IL* 2014 - 2019

- Published in high profile journals including Cell and PLOS Computational Biology.
- Designed, built, and deployed several simulation and analysis frameworks for the research community.
- Discovered a surprising link between expression dynamics and metabolism by developing a model that predicts developmental mistakes.
- Discovered a novel cell decision mechanism by using computer vision to derive insight from microscopy data.
- Increased data volume and quality by developing a computer vision pipeline for automated microscopy analysis.

Process Engineer at LanzaTech *Chicago, IL* 2012 - 2014

- Developed innovative renewable energy design concepts, earning two granted patents and further pending applications.
- Designed and built the company's core process modeling framework, which was rapidly adopted by all engineers.
- Collaborated with technology providers to identify complementary value streams, leading to corporate partnerships.
- Modeled refinery-scale processes to predict and optimize economic and life-cycle performance.
- Advised executives and investors with technical analysis that directly inspired major strategic decisions.

Research Assistant at UC Santa Barbara *Santa Barbara, CA* 2011 - 2012

- Conducted first ever dynamic measurement of interaction forces between vesicles. Published in *Soft Matter*

Skills

Data Engineering
Relational databases
Web scraping
NLP, Structured text, RegEx
Feature selection
Dimensionality reduction

Analysis
Hypothesis testing
Bayesian inference
Unsupervised learning
Networks & Time series
Visualization

Computer Vision
Feature extraction
Image segmentation
Feature classification
Spatial analysis
Quantitative microscopy

Modeling
Stochastic processes
Dynamical systems
Nonlinear regression
Classification
Agent-based models

Coding
Python & Cython
Package development
REST APIs
Git, LaTeX, HTML/CSS
Unix shell, OSX/Ubuntu

Projects, software, publications, patents, mentorship history, and teaching history are listed on my website. References available upon request.