

Career Objective

To master complex systems, to distill them to their essential requirements, to guide my team to solutions to challenging and rewarding problems, and to make the results palatable to the non-expert.

Interests

Reinforcement machine learning, multi-armed bandits, Bayesian inference, applications of linear and abstract algebra, applications of category theory, functional design and architecture.

Engineering History

- **Senior Full-stack Engineer** □ Lumi □ July 2018 to March 2020
Development of supply-chain software-as-a-service applications and associated infrastructure. Working closely with Product and Stakeholders to refine software requirements. Planning and execution of large, coordinated feature sets. Data modeling. Systems design and architecture. Training. PostgreSQL, Haskell, Purescript. Remote.
- **Software Engineer III** □ CJ Affiliate □ June 2016 to July 2018
Design and implementation of customer-facing GraphQL APIs. Design and implementation of machine learning algorithms, pipelines, and applications. Continuous deployment of high-availability distributed systems at scale. Data collection and analysis at scale. Data modeling. Systems design and architecture. Development of training materials. Java, Scala, Spark, Kafka, Kinesis, AWS, Kubernetes. On-site.

Education

- **Ph.D. Mathematics** □ Auburn U. □ June 2014.
Advisor: Huajun Huang.
Dissertation: *On the Derivation Algebras of Parabolic Lie Algebras with Applications to Zero Product Determined Algebras.*
Honors: Recipient, *Baskervil Fellowship*, Spring 2009.
- **B.S. Mathematics** □ Cal. State U., Channel Islands □ December 2007.
Emphasis: Mathematics Education.
Honors: *Mathematics Department Program Honors* and *Cum Laude.*

Other Professional History

- **Lecturer of Mathematics** □ Cal. State U., Channel Islands □ Fall 2018 to Present
Teaching duties, including *Strategies and Game Design*, *Calculus with Business Applications*.

- **Lecturer of Mathematics** □ Cal. State U., Bakersfield □ Fall 2015, Spring 2016
Teaching duties, including *Set Theory and Logic*, *Calculus I, II* (standard track and Engineering track). Advise undergraduates. Serve on various administrative committees.
- **Assistant Professor of Mathematics** □ Tuskegee U. □ Fall 2014, Spring 2015
Teaching duties, including *Calculus I*, *Pre-Calculus*. Advise undergraduates. Serve on various administrative committees.

Publications

- “On derivations of parabolic Lie algebras”. In: *Journal of Lie Theory* (Feb. 2017)
- “The matrix Lie algebra on a one-step ladder is zero product determined”. In: *Alabama Journal of Mathematics* (Dec. 2015)
- with Huajun Huang. “On zero product determined algebras”. In: *Linear and Multilinear Algebra* (Feb. 2015)

Selected Presentations

- “Monoid Comprehension Calculus and applications”. CSUCI Math and Physics Seminar. Camarillo CA, Feb. 2020
- “Functional References (Lenses and such)”. Santa Monica Haskell Users Group. Santa Monica CA, Feb. 2019
- “Delivering GraphQL Services Using Sangria”. Los Angeles Scala Users Group. Los Angeles CA, June 2018
- “GraphQL and Sangria: How to get a GraphQL API Server Up and Running”. Santa Barbara Java Meetup. Santa Barbara CA, June 2018
- “Applications of Category Theory to Programming Languages”. CSUCI Math and Physics Seminar. Camarillo CA, Mar. 2018
- “Impressions and Implications of ‘Infinite sets that admit fast exhaustive search’ by Martín Escardó”. Papers We Love, LA. Santa Monica CA, Sept. 2017
- “Thompson Sampling”. Santa Barbara Machine Learning Meetup. Santa Barbara CA, Mar. 2017
- “On ‘On the likelihood that one unknown probability exceeds another in view of the evidence of two samples’ by W. R. Thompson”. Papers We Love, LA. Santa Monica CA, Feb. 2017
- “Applications of Thompson Sampling to Machine Learning”. CSUCI Math and Physics Seminar. Camarillo CA, Feb. 2017
- “Automatic Differentiation in Haskell”. Santa Monica Haskell Users Group. Santa Monica CA, Aug. 2016
- “Applications of Linear Algebra to Data Analysis”. CSUCI Math and Physics Seminar. Camarillo CA, Feb. 2016

Community Activity

- **Global Urban Datafest** □ *Regional winner, global finalist* □ Spring 2015, Auburn AL
Worked on a team with three others to develop a data-intensive web application over the course of one weekend. We created an app that analyzes webcam images via Canny edge detection, gradient vector fields, and principle component analysis to detect arbitrary unusual activity. Applications include automated surveillance, early-warning systems, and disaster recovery.