Brent Moran

Data Engineering & Analytics

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Relevant Work Experience

- **Senior Data Engineer** *Center of Complex Interventions*, Remote 2020-now
  Researching innovation in the web search space and other data related projects.
- **Senior Data Engineer** *Creative Commons*, Remote 2019-2020
  Development and maintenance of data pipelines to support CC Search, a media search engine. Research into impact of organizations using CC licenses. Maintainer of CC Catalog project. Lead internships related to all of the above.
- **Full Stack Developer** *Metronom GmbH*, Berlin 2018-19
  Implementation and maintenance of an internal web app for professional users. Development and improvement of pricing algorithms. Implementation of data pipeline in GCP.
- **Big Data Engineer & Analyst** *Haensel AMS GmbH*, Berlin 2017-18
  Data analysis, Python development, and development on the AWS cloud. Set up and test different algorithms.

Education

- **Master of Science** *Freie Universität Berlin* 2018
  Thesis topic: Polynomial bounds on grid-minor theorem
- **Bachelor of Science, Summa Cum Laude** *University of Colorado, Denver* 2015
  Major: Mathematics
  Minor: Economics
- *Truman State University*, Kirksville, Missouri 2003-06
  Studied music composition and analysis

Interesting Projects

- **Linked Commons Graph Analysis** 2020-now
  Leading an internship to determine impact of CC licenses as well as organizations which use them from the Linked Commons graph data set.
- **CC Catalog** (Click for Github repo) 2019-now
  Maintaining the CC Catalog project to gather and index metadata about hundreds of millions of images from 3rd party APIs as well as Common Crawl. The metadata is then transformed, cleaned, and loaded into a PostgreSQL DB for use in CC Search.
- **KVI Recommendations on GCP** 2019
  Extended a data processing job to choose appropriate Key Value Items for special competitor-based pricing strategies. Migrated processing job from internal cloud solution to GCP.
- **Dynamic content via AI** 2018
  Designed, implemented, and deployed to production a serverless, AI-driven API allowing a client website to provide dynamic content to a user based on that user's past behavior.
- **ETL Pipeline on AWS** 2017
  Participated in the design and implementation of a serverless ETL (Extract, Transform, and Load) pipeline composed of AWS Lambda functions and Athena Queries (started by Lambda functions in most cases), controlled and sequenced by a finite state machine (AWS Step Function).
- **Social Dynamics Simulation (2015):** Designed and implemented a simulation of turnover (churn) present in a fictional company, for the purposes of analyzing the effect different hiring/promotion/firing policies have on employee outcomes in a hierarchical corporate setting.

- **Network influence analysis (2014):** Designed and implemented a web crawling program in order to generate citation networks from data on MathSciNet. Analyzed these networks in order to measure the academic influence of various mathematics papers.
- **Cellular automata (2014):** Designed and implemented a simulation of world urbanization consisting of a cellular automaton underlying an agent-based simulation.

Technical Skills

- **Programming:** Python, PySpark, Golang, JavaScript, Java (Spring Boot), Scala (Play)
- **Querying:** PostgreSQL, MySQL, AWS Athena, Google BigQuery
- **Cloud Providers:** Amazon Web Services, Google Cloud Platform
- **Operating Systems:** Linux, MacOS
- **Other:** bash, Git, Apache Airflow, Docker, Kubernetes, Redis, Jenkins, LaTeX

Conference Talks

- **Joint Mathematics Meetings:** San Antonio, Texas 2015
  Ramsey-Minimal Saturation Number for Families of Stars
- **MAA Mathfest:** Portland, Oregon 2014
  The 1-Relaxed Modular Edge-sum Labeling Game
- **PPRUMC:** Colorado Springs, Colorado 2014
  Ramsey-Minimal Saturation Number for Families of Stars

Publications

[1] Z. Berikkyzy, S. Butler, J. Cummings, K. Heysse, P. Horn, R. Luo, and B. Moran. A forest building process on simple graphs. *Discrete Mathematics*, 341(2), 2018.

[2] A. Brandt, B. Moran, K. Nepal, F. Pfender, and D. Sigler. Local gap colorings from edge labelings. *Australasian Journal of Combinatorics*, 65(3), 2016.

Other Research Experience

- **Willamette Valley REU-RET Consortium for Mathematics Research**
  1-Relaxed Modular Edge-sum Labeling Game Number Supervised by Charles Dunn and Jennifer Nordstrom of Linfield College, during this REU in competitive graph coloring, we developed a new graph labeling scheme based on modular arithmetic, and proved a number of results regarding our scheme.