Samuel Brotherton

CONTACT INFORMATION

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EDUCATION

Harvard University, Cambridge, MA

B.A., Mathematics and East Asian Studies **Sep 2008 – May 2012**

Received highest honors for senior thesis analyzing over 200,000 Chinese blog posts, algorithmically detecting mutations in the Chinese language in response to censorship. Completed coursework in abstract algebra, Galois theory, topology, real and complex analysis, probability theory, and linguistics.

PROFESSIONAL EXPERIENCE

Authentic Artists, San Francisco, CA

Director of Machine Learning **Sep 2019 – present**

Lead a remote (US-based) engineering team to build AI-powered audiovisual experiences, including a cloud deep learning server for song generation, a C++ constraint/transformation library for imposing additional musical style on deep learning output, an automated Max/Ableton session for audio generation, and a dynamic Unreal scene to generate music videos. Coordinated with creative and executive teams to balance engineering and IP development with artistic and business goals.

Cairn Labs, Salt Lake City, UT

President and Founder **Jan 2016 – Feb 2020**

Lead a cross-functional team of 4-6 to design and build software for clients, with a focus on applications that integrate state-of-the-art NLP and machine learning. Notable projects include:

- A deep learning based conversational UI framework to power will.i.am's new wireless earphones and other applications. Backed by Python, Tensorflow, and other technologies. Supports multiple languages, extensible dialogue flows, and includes a type system that integrates with a custom knowledge base. Our software had a significant role in the success of the client's recent $117M fundraising round (`https://goo.gl/iMvVTt`).
- An intelligent agent for a healthcare client that performs realtime conversational analysis from raw audio. Uses an open source library I built for training and serving machine learning models from Elixir (`https://github.com/cairn-labs/mlem`).
- A risk scoring server for a client in the car insurance industry, collecting realtime driving data and assigning machine-learning based driver risk scores at a rate of 3000+ qps.
- An advertising server to display appropriate concert ticket offers to users, based on user-level and page-level contextual targeting. Backed by Elixir/Phoenix, Python, PostGIS, and React.js.

Google, Venice, CA

Software Engineer III **Jun 2014 – Mar 2016**

Worked on a small team using natural language processing and other machine learning techniques to improve advertisement quality. Led a 20% project related to mining semantic information from web data, which was adopted by several teams across different product areas. Built a named entity recognition system in C++ and a link detection algorithm that runs on very large graphs; contributed to a topic model for clustering semantic entities.

Whisper, Venice, CA

Software Engineer and Data Scientist **Mar 2013 – Apr 2014**

Sole data scientist at a rapidly expanding social media startup seeing upwards of three billion monthly pageviews. Designed and built an NLP service to extract topics and tags from posts, predict image searchterms from unstructured text, and target content to users. Implemented a new geographic search system using PostGIS that decreased search time by 90%. Worked closely with the front and backend development teams, writing production code in Erlang and Python.

PROGRAMMING EXPERIENCE

Languages: Python, C++, Erlang, Elixir, Mathematica, C#, F#, Bash, C, LaTeX
Server Technology: Kubernetes, Docker, GCP, Cassandra, Redis, PostgreSQL, ElasticSearch/Lucene