

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

Cairn Labs, Salt Lake City, UT

President and Founder

Sep 2011 – present

Full stack software development for clients, with a focus on building server-side 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 web-based business intelligence tool allowing decision-makers within the pharmaceutical industry to optimize total revenue of product launches across many countries. Backed by Elixir/Phoenix and React.js; includes a fast, concurrent traveling salesman problem solver.
- 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.

Cairn Geographics, Salt Lake City, UT

Founder

Feb 2017 – present

A SaaS business intelligence product to help analysts enrich their customer data with geographic columns (latitudes/longitudes, ZIP codes, etc) and demographics. Processing is server-based but integrated with Microsoft Excel, Python, and the Domo platform: www.cairngeographics.com.

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++, C#, F#, Erlang, Elixir, Mathematica, Haskell, Bash, C, L^AT_EX
Data Technology: Cassandra, Redis, PostgreSQL, ElasticSearch/Lucene, MySQL, MongoDB