Benjamin J. Caine

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Education

Northeastern University, Boston, MA | May 2016

Candidate for Bachelors of Science in Computer Engineering, Minor in Mathematics | GPA: 3.74

Honors:	Dean's List, Dean's Scholarship
Graduate Courses:	Machine Learning, Computer Vision, Complex Networks, Robotic Systems
Courses:	Advanced Engineering Algorithms, Linear Algebra, Statistics and Stochastic Processes

Technical Skills

Programming Languages:	Python, C++, Ruby, Coffeescript, Java, SQL
Data Science Tools:	Keras, Tensorflow, Theano, Scikit-learn, Numpy, Pandas, OpenCV, MATLAB, NetworkX
Storage Technologies:	PostgreSQL, Redis, MySQL, MongoDB, Redshift, S3, SQLAlchemy
Web Technologies:	React.js, Flask, Ruby on Rails, Sinatra, FlexBox, HTML, CSS

Employment Experience

Northeastern University, Boston, MA – *Machine Learning Research Assistant* | September-Present 2015
- Applying machine learning and data mining techniques to model and study human emotion using physiological data (electrocardiogram, epidermal activity) and subject self reporting of emotional events.

Vessel, San Francisco, CA – *Software Engineering Intern* | January-June 2015
- Performed clustering and network analysis based on user viewing data for market research and content acquisition strategy. Built first recommendation service for discovering related content.
- Researched, designed and developed a web service to automatically crop photo assets using OpenCV for cover art given a set of aspect ratios. Removed 4-8 hour delay in daily publishing. Saved 10+ hours a week of manual work.
- Developed a variety of web features including twitter integration and tweet scheduling, comment and community moderation tools, and content dashboards. Built both React.js UI and Python backend services.

IDEA: Northeastern's Venture Accelerator, Boston, MA – *Technical Officer* | April 2013-December 2014
- Directed IDEA's technical projects, which included re-architecting our venture management, data acquisition and workflow tools, and managed the redesign of our public facing website.

Cogito Corp, Boston, MA – *Software Engineering Co-op* | January-June 2014
- Developed multithreaded server side components and features for a real time audio processing and analytics platform that models speech data. Major projects included a multithreaded fault tolerant call processing daemon, LDAP (Active Directory) authentication integration, service scalability testing, and a variety of web APIs.

Smartleaf, Cambridge, MA – *Software Engineering Co-op* | January-June 2013
- Developed features for a Ruby on Rails web application that provides automated portfolio management services. Examples include a portfolio strategy drafting tool, trading compliance detection reporting, a flexible CSV deserialization library for getting bank data, and a variety of other web development tasks.

Projects

End-to-End Training of Convolutional Recurrent Neural Networks
- Built a neural network model consisting of Convolutional and Recurrent (LTSM or GRU) layers that learns to calculate the sum of the values of a series of MNIST digit images. It is trained end-to-end, with a series of images as the input, and the summed up scalar value as the output.

Visible Light Communication (Senior Capstone)
- Developed a USB transmitter and receiver capable of transmitting data at dial-up speeds by modulating LEDs faster than the eye can detect. Wrote an optics simulator, implemented encoding/decoding, packetization, memory management, and interprocessor coordination with real time coprocessors on an embedded device.

Interests: Machine Learning, Computer Vision, Network Science, Optimization Algorithms, Statistics, Baseball, Skiing