

JOHN W. MILLER

(847) 513-2475 | johnwmillr@gmail.com

johnwmillr.com
github.com/johnwmillr

Projects

LYRICS GENIUS — *Python wrapper for downloading lyrics and music metadata from the Genius.com API*

Python | github.com/johnwmillr/lyricsgenius

SPRING 2017 - PRESENT

- Actively maintaining project on GitHub, coordinating multiple coordinators and pull requests
- Utilized the package in a lyrics analysis project that attracted over half a million views on Reddit.com

FACE DETECTION — *Implementation of active shape models for detection of faces in color images*

Matlab | github.com/johnwmillr/activeshapemodels

SPRING 2017

- Trained a point distribution model to detect faces using over 3,000 publically available face images
- Provided guidance and technical support to students using project on *Mathworks's* code exchange

MUSCLE MUSIC — *Arduino device for translating muscle activity into electronic music*

Arduino | [instructables.com/id/make-muscle-midi-music](https://www.instructables.com/id/make-muscle-midi-music)

WINTER 2017

- Designed and built a circuit and program that generated and controlled music via muscle signals
- Winner out of 200+ entrants in the "Sensors Contest 2017" on *Instructables.com*

TWITTER POLITICAL — *Sentiment analysis on Tweets mined during the 2016 presidential election*

Python | github.com/amgerard/twitter-political

FALL 2017

- Incorporated language and cluster analysis on 10k+ Tweets to predict user opinions of candidates

EXPERIENCE

MASTERS FELLOWSHIP — *Automated diagnostics for retinal diseases using machine learning*

Garvin Image Lab | University of Iowa

AUG 2016 — MAY 2018

- Developed new combinations of shape and machine learning techniques for automated diagnostics
- Trained random forest classifiers to distinguish between causes of optic disc edema

RESEARCH ASSISTANT — *Neuroscience research and experiment design*

Human Spinal Cord Research Lab | University of Iowa

SEP 2014 — AUG 2016

- Designed and implemented experiments investigating therapeutic effects of spinal cord stimulation
- Wrote and maintained a Matlab codebase for research team's analysis and visualization workflow

RESEARCH FELLOW — *Computational neuroscience research program*

Center for the Neural Basis of Cognition | Carnegie Mellon University

MAY — JUN 2013

- Applied principal component analysis to reveal underlying activity patterns in EMG, 3D motion capture, and neurological data recorded simultaneously from cats during locomotion

EDUCATION

UNIVERSITY OF IOWA | COLLEGE OF ENGINEERING

AUG 2016 — MAY 2018

Masters of Science in Electrical and Computer Engineering, GPA: 4.03/4.00

- Thesis: *Differentiation between causes of optic disc swelling using retinal layer shape features*

GOSHEN COLLEGE

SEP 2010 — MAY 2014

Bachelor of Arts in Physics, minor in English, GPA: 3.77/4.00

- Bassist in Lavender Jazz and symphony orchestra

TECHNICAL SKILLS

- *Languages:* Python, Matlab, C++
- *Packages:* NumPy, Pandas, scikit-learn, matplotlib, seaborn, Jupyter
- *Data science:* Machine learning, image processing, natural language processing, data visualization