

JOHN W. MILLER

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johnwmillr.com
github.com/johnwmillr

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

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 maintain project on GitHub, coordinating open-source collaboration with multiple users
- Applied the package to a lyrics analysis project, attracting 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 in a public dataset of over 3,000 images
- Provided guidance and technical support to students using project on *Mathworks'* 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
- 2nd Prize (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

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

EXPERIENCE

MASTERS FELLOW — *Automated diagnostic tools for diseases of the retina*

Garvin Image Lab | University of Iowa

AUG 2016 — MAY 2018

- Developed new combinations of shape analysis and machine learning tools for disease classification
- Trained random forest classifiers to determine the cause of optic disc swelling with 86% accuracy

RESEARCH ASSISTANT — *Neuroscience research and experiment design*

Human Spinal Cord Research Lab | University of Iowa

SEP 2014 — AUG 2016

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

RESEARCH FELLOW — *Computational neuroscience research program*

Center for the Neural Basis of Cognition | Carnegie Mellon University

MAY — JUL 2013

- Used principal component analysis (PCA) to reveal underlying activity patterns in simultaneous recordings of muscle, neurological, and 3D motion capture data during treadmill 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

- Maple Scholars research fellow (Physics), 2011