JOHN W. MILLER

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johnwmillr.com
github.com/johnwmillr

TECHNICAL SKILLS

- *Languages*: Python, Matlab, C++
- *Packages & Tools*: SciPy, NumPy, pandas, Matplotlib, scikit-learn, seaborn, Jupyter, GitHub
- *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 | www.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 | www.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 | 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 | www.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