JOHN W. MILLER

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www.johnwmillr.com
github.com/johnwmillr

EDUCATION

UNIVERSITY OF IOWA, Iowa City, Iowa
*Master of Science in **Electrical and Computer Engineering**, May 2018*
- GPA: 4.03/4.00

GOSHEN COLLEGE, Goshen, Indiana
*Bachelor of Arts in **Physics**, minor in **English**, April 2014, cum laude*
- GPA: 3.77/4.00

WORK AND RESEARCH EXPERIENCE

UNIVERSITY OF IOWA – GARVIN OPHTHALMIC IMAGE PROCESSING LAB — Iowa City, IA
Masters Fellowship — *August 2016 – May 2018*
- Developed novel combinations of shape analysis and machine learning techniques for automated diagnostics
- Trained random forest classifiers to distinguish between causes of optic disc edema with an 86% accuracy
- Constructed the first-ever statistical shape models of the inner limiting membrane

UNIVERSITY OF IOWA – HUMAN SPINAL CORD RESEARCH LAB — Iowa City, IA
Research Assistant — *September 2014 – August 2016*
- Implemented *in-vivo* experiments investigating the mechanism and therapeutic effects of spinal cord stimulation in sheep models of neuropathic pain and spinal cord injury
- Collected and analyzed electromyographic (EMG) and 3D motion capture data during treadmill ambulation
- Wrote lab's MATLAB codebase for analysis of all data (e.g. EMG, kinematic, single-unit neural recordings)

NORTHWESTERN UNIVERSITY – MILLER LIMB LABORATORY — Chicago, IL
Research Volunteer — *May – August 2014*
- Designed and conducted an experiment to explore the effects of transcranial direct current stimulation (tDCS) on the discharge of single neurons in the primate motor cortex
- Organized biweekly meetings devoted to maintaining and improving the lab's codebase

CARNEGIE MELLON UNIVERSITY – CENTER FOR THE NEURAL BASIS OF COGNITION — Pittsburgh, PA
Research Fellow, *Rehab Neural Engineering Labs, University of Pittsburgh* — *May – July 2013*
- Applied principal component analysis to reveal underlying activity patterns in EMG, 3D motion capture, and neurological data recorded simultaneously from cats during locomotion

GOSHEN COLLEGE – MAPLE SCHOLARS PROGRAM — Goshen, IN
Research Scholar — *May – July 2011*
- Furthered development on the "Musician Maker" project – an intuitive, computer-controlled system of novel hardware instruments that allows non-musicians to improvise expressive music
- Designed and built new musical instruments that transduced physical motions into digital music signals

PROJECTS AND ACTIVITIES

NATIONAL ADVANCED DRIVING SIMULATOR (2017 – present) – Developing classifier for drowsiness detection (Python)

FACE DETECTION (2017) – Implementation of active shape models algorithm for face detection (MATLAB)

LYRICSGENIUS (2017) – Python wrapper for downloading song lyrics and annotations from Genius.com (Python)

TWITTERPOLITICAL (2016) – Hackathon project for sentiment analysis of Tweets scraped from Twitter (Python)

TECHNICAL SKILLS

- Python, MATLAB, C++, Arduino
- Image processing, signal processing, machine learning, experimental design
- Photoshop, Illustrator, InDesign, LaTeX
- GitHub workflow, Agile methodology

AWARDS AND ACHIEVEMENTS

- /r/dataisbeautiful post with half a million views, *Reddit.com*
- Contest winner "Sensors Contest 2017," *Instructables.com*
- Neuromodulation Travel Award 2015, *University of Minnesota*
- Finalist, 2012 Guthman Musical Instrument Competition, *Georgia Technical Institute*