Charles M. Eyermann

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COMPUTATIONAL SKILLS

- Languages: Python (fluent), Matlab (proficient), SQL (proficient), some Scala, Java, and C++
- Packages: pyspark, OpenCV, tensorflow, keras, pandas, git
- Platforms: Palantir Foundry, Kedro, KNIME

EDUCATION

Carleton College, Northfield, Minnesota: Class of 2016

- Computer Science major
- Biology TA, 2013
- My senior capstone implemented a model self driving car in OSRF's Gazebo. My contributions were primarily to the camera module which was done with OpenCV and C++.

WORK EXPERIENCE

MORSE Corp, Cambridge, MA
Team Lead/Software Engineer (2019-present)

- Work in a fast-paced, customer-driven environment
- Developed end-to-end automated pipeline that assesses vendor-supplied computer vision algorithms, reducing algorithm evaluation time from weeks to under 24h
    - Core software developed: DAG-like pipelining package, results visualization package
    - Tools used: Python, pyspark, docker, grpc, matplotlib, seaborn
- Applied expertise in machine learning to craft effective test sets for computer vision models
- Advised customer on ways to improve the data and labels to maximize model performance
- Promoted to team lead after < 6 months on project, managing a team of 6 programmers and data scientists
- Present technical analyses of state of the art machine learning algorithms to 200+ people every few months

UCLA Jane and Terry Semel Institute for Neuroscience and Human Behavior, Los Angeles, California
Programmer/Analyst in the lab of Dr. X William Yang, MD/PhD (2018-2019)

- Designed and implemented data processing pipeline to handle terabyte-scale volumetric imaging data using Python and MATLAB
- Implemented a memory-efficient method to crop subsections of 3D images in excess of 1TB in MATLAB
- Applied neural networks to automatically reconstruct neuronal structures in 3D in Python and Tensorflow
- Organized a team of undergraduates to produce ground truth 3D neuron reconstructions to improve neural network performance and built a webapp for them to submit reconstructions using HTML, CSS, PHP, and MySQL

Center for Genomic Medicine, Massachusetts General Hospital, Boston Massachusetts
Bioinformatics Specialist I in the lab of Dr. Marcy E. MacDonald, PhD (2017-2018)

- Produced high quality Neuronal Progenitor Cell lines (NPCs) from iPSCs via neuronal induction and verify their integrity via ICC and ATP analysis
- Used CRISPR-Cas9 system in iPSCs and employed methods to improve yield
- Characterized NPCs phenotypically with Broad Institute's Cell Painting , and analyzed them computationally with CellProfiler and KNIME Analytics Platform (Python and R)
- Analyzed genome-wide association study (GWAS) results

Mayo Clinic Center for Regenerative Medicine, Rochester Minnesota (Summer 2015)
Todd and Karen Wanek Center for Hypoplastic Left Heart Syndrome
Researcher under Dr. Katie Campbell and Dr. Tim Nelson

- Differentiated iPSCs to cardiac tissue
- High-throughput qPCR data generation and analysis
- Collaborative, translational environment employing familial genetic profiling
- Exposed to informatics tools such as QIAGEN's Ingenuity Variant Analysis

National Institutes of Health NCATS, Rockville Maryland (Summer 2012, 2013, 2014)
National Center for Advancing Translational Science
Researcher under Ajit Jadhav and Adam Yasgar

- Proficiency with immunocytochemistry methods and cell culturing techniques
- Assay miniaturization to 1536-well format for high-throughput screening
- Mentored new interns in cell culturing and ICC techniques
- Collaborated with Perkin-Elmer to streamline the detection of false positives in their AlphaScreen technology and to make the data freely available to the public.

Programmer, database curator under Ajit Jadhav and Tyler Peryea

- Developed data aggregating solutions with Python that contributed to what is now PHAROS (https://pharos.nih.gov)
- Thorough understanding of Wikipedia, KEGG, Drugbank APIs
- Competency with lxml, BeautifulSoup4, pandas Python modules

PUBLICATIONS

Brainwide Genetic Sparse Cell Labeling to Illuminate the Morphology of Neurons and Glia with Cre-dependent MORF Mice. Veldman MB, Park CS, Eyermann CM, Zhang JY, Zuniga-Sanchez E, Hirano AA, Daigle TL, Foster NN, Zhu M, Langfelder P, Lopez IA, Brecha NC, Zipursky SL, Zeng H, Dong HW, Yang XW. *Neuron.* 2020 Oct 14;108(1):111-127.e6. doi: 10.1016/j.neuron.2020.07.019.

High-throughput identification of promiscuous inhibitors from screening libraries with the use of a thiol-containing fluorescent probe. McCallum MM, Nandhikonda P, Temmer JJ, Eyermann C, Simeonov A, Jadhav A, Yasgar A, Maloney D, Arnold AL. *J Biomol Screen.* 2013 Jul;18(6):705-13. doi: 10.1177/1087057113476090. Epub 2013 Feb 27.

PRESENTATIONS

Eyermann. "Development of Small Molecule Modulators of the Vitamin D Receptor", NIH Summer Poster Day, August 2012.

Eyermann, Huang. "Profiling Inducers of Endoplasmic Reticulum Stress Response in U87-MG Malignant Glioma Cells", NIH Summer Poster Day, August 2013.

Eyermann. "High throughput screening to identify and characterize compounds that interfere with Europium- and Terbium-based AlphaScreens", NIH Summer Poster Day, August 2014.

Cook, Eyermann, Wasserberg, Wells, Yang. "A potential mechanism for the pathogenesis of HLHS", Mayo IMPACT Symposium, February 2015.

Eyermann, Wells, Yang. Mayo IMPACT Summer Summary Presentation, Mayo Clinic, August 2015

Eyermann, Green, Knetzger, Lane, Maki, Yang. "Self Driving Cars", Senior Thesis Symposium, Carleton College, March 2016.

AWARDS

Gold Medal – 2015 Mayo Clinic IMPACT competition

- Multidisciplinary team of Carleton College students, submitted proposal for a cause of Hypoplastic Left Heart Syndrome and presented findings at a research symposium. Granted research position and funding at Mayo Clinic for Summer 2015 to test novel hypothesis.

Eagle Scout, 2012

VOLUNTEER EXPERIENCE

Partners for Youths with Disabilities, Mentor. Worked with Joe, a 17 year old teen with Autism to discover new interests and build new skills for his post-high school life (2017-2018).

Emergency Department MGH, Triage Escort. Helped patients in the emergency department get to the correct location after seeing triage nurses (2017-2018).

HealthFinders MN clinic, Electronic Medical Record Intern (2013-2014).

Students Together Opposing Prejudice Leader: Taught 7^{th}-8^{th} grade students tools to recognize, confront, and deal with prejudice and discrimination that they experience in their lives (2009-2012).