Kellen L. Mulford

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Personal Statement: I am an avid and agile learner. My graduate work building predictive models and software in healthcare has exposed me to a broad set of technologies and challenges that make me a creative and efficient team member in any field.

Technical Skills

Programming Languages Python, R, Javascript, Typescript, HTML & CSS

Software Development Node.JS, Express, Flask | React, React Native | SQL, MongoDB | Git | Spark

Data Science
Deep Learning (Tensorflow)
Machine Learning (Scikit-Learn, XGBoost)
Data Wrangling (pandas, R-Tidyverse)
Statistical Modeling (survival analysis, bayesian modeling, spatial data)
Data Visualization (shiny, ggplot, matplotlib)

Select Projects/Publications

More information about my projects, publications, and other items can be found at the personal site above

Classifying Neurovascular Conflict (NVC) of the Trigeminal Nerve From MRI Images

- Problem: Substantial variability in radiologist reads of neurovascular conflict on MRI
- Queried PACS database for suitable image series
- Oversaw creation of gold-standard labels in dataset (produced *R-Shiny* dashboard for exploration of radiologist agreement)
- Used 3D convolutional neural networks (*Tensorflow*) to predict neurovascular conflict from MRI images
- Publication in preparation

A Web App for Scheduling, Logging, and Archiving Medical Physics Reports

- Problem: Physics report logging was performed manually - time-consuming and error prone.
- Solely developed a full-stack web application built on *Node.JS* using *MongoDB* stores with a *Bootstrap* front end.
- Eliminated an unwieldy excel spreadsheet and the need to enter reports manually
- Developed a companion CLI for the automatic generation of report templates based on equipment parameters

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Education & Awards

Ph.D. - *Medical Physics* - University of Minnesota, Minneapolis MN   2017 - 2022 (expected)
- Advisor: Pierre-Francois Van de Moortele, Department of Radiology
- Project: Predictive modeling in trigeminal neuralgia with EHR and Imaging Data

B.A. - *Physics, Religion* - St. Olaf College, Northfield MN   2013 - 2017
- Awarded *Distinction* in both majors for research work and academic excellence

NIH-NCATS TL1 Predoctoral Scholar (Link)   2020 - 2022
- 2-Year funded program with research support and additional training in translational science and science communication

Finalist, Interdisciplinary Health Data Competition - Carlson School of Management   2021
- Project: Modeling the Vaccination Rate of MN Counties from Demographic and COVID-19 Hospitalization Data