Daniel **Smith**

248.207.5059 | smith478@msu.edu | lung cancer neural net demo | smith478 | DanielSmith

education

Ph.D. Mathematics, Michigan State University 2007–2013
Thesis: *Stability of the almost Hermitian curvature flow*

B.Sc. Mathematics, Michigan State University 2002–2007

skills

Deep learning Frameworks: TensorFlow, PyTorch, Keras
Techniques: convolutional neural networks, object localization, (variational) autoencoders, multilayer perceptron, recurrent neural networks

Classical Machine Learning Generalized Linear Models (including logistic/linear regression), ensemble models (including gradient boosting and random forest), support vector machines, k-nearest neighbor, k-means clustering, principal component analysis

Programming Python (including numpy, scipy, pandas, jupyter notebook/lab, scikit-learn, keras, tensorflow, pytorch), R, git, LaTeX

Databases SQL, Hive, Spark

experience

Senior Data Scientist
Quicken Loans, Detroit MI August 2017–present

- Built a convolutional neural network to automate classification of multi-page client documents
- Constructed both a recurrent neural network (LSTM) and time-dependent survival analysis model to determine client retention using web activity
- Used a convolutional neural network to automate text processing
- Built exploratory data analysis and model comparison tools
- Led a weekly Deep Learning Journal Club, discussing and coding current research. Mentored 2 interns and 1 team member with their projects

Actuarial Technician
Auto-Owners Insurance Company, Lansing MI July 2014–August 2017

- Built models to predict claim frequency and severity using GLMs
- Developed tracking reports to monitor the performance of models
- Built tools to perform variable selection, interaction detection, and outlier analysis
- Implemented PCA and PLS techniques to address multi-collinearity
- Worked as the lead project coordinator for the Commercial Auto pricing algorithm
- Passed actuarial exams P, FM, MFE, C, and S

Visiting Assistant Professor
Furman University, Greenville SC Fall 2013–July 2014

- Published research: The behavior of the Chern Scalar Curvature under the Chern-Ricci flow, 2015, with Matt Gill, Proceedings of the American Mathematical Society
- Presented research talks to faculty and graduate students at UC Berkeley and UC Irvine

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professional project

Data Scientist
Lung Cancer Detection/Localization — August 2018–present

- Designed a convolutional neural network that both detects and localizes pulmonary nodules in dogs (click here for a demo)
- Worked with a software engineer and veterinary radiologist to create a Google Cloud Platform hosted service

extracurriculars

Competitor
Kaggle Humpback Whale Identification — January 2019–February 2019

- Built a siamese neural network to do whale classification with most classes containing less than 5 images
- Finished 226 out of 2131

Data Scientist
r/borrow & Santa's Stolen Sleigh — 2016–2017

- The goal of r/borrow was to evaluate the credit worthiness of reddit borrowers. (Click here for a write up of the project)
- The Santa's Stolen Sleigh project was a kaggle competition that was a combination of the nap sack and traveling salesman problems. (Click here for a write up of the project)

Statistics Consultant
Michigan State University - College of Veterinary Medicine — May 2016–August 2017

- Provided statistical analysis on 6 research studies using t-test, ANOVA, and logistic regression

Volunteer
Detroit Area Pre-College Engineering Program (DAPCEP) — February 2018–May 2018

- Taught middle school students programing and hardware basics

Volunteer
Volunteers of America — October 2016–August 2017

- Performed exploratory data analysis on medical data to support grant applications