Erik Schafer

August 1, 2020

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Selected Skills and Languages

- Python
- Numpy
- PyTorch
- CUDA Toolkit
- Scikit-Learn
- Keras
- AWS SageMaker
- SQL (T-SQL, MySql, PL-SQL)
- Java
- Spring Framework
- C#
- ASP .NET
- Machine Learning
- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning
- Deep Learning
- Neural Nets (convolutional, linear, etc.)
- Ensemble Methods
- Logistic Regression
- Decision Trees
- Principal Component Analysis
- Dimensionality Reduction
- Support Vector Machines
- Autoencoders

Education

Georgia Tech, Dec. 2019
M.S. Computer Science
Focus: Machine Learning

Hampden-Sydney College 2013
Magna Cum Laude
B.S. Applied Mathematics
B.S. Computer Science
A.A. German Language

Fishburne Military School 2009
Advanced Studies Diploma
Executive Officer A. Company

Selected Projects, Georgia Tech

Big Data for Healthcare Spring 2019

Disease Recognition **PyTorch, CUDA 10.1, DenseNet121, ResNet152, SSH**

Performed GPU accelerated disease recognition on X-Ray images with the NIH's public *ChestXRay14* dataset. The pipeline was implemented with PyTorch and Nvidia's CUDA 10.1 toolkit using remote enterprise grade hardware as well as trained locally with my Nvidia GTX 1070 card. The models used were implementations of DenseNet121 and ResNet152; a metric of ROC-AUC was used to compare model performance with the latest relevant papers. Discussion focused on the effects of image downsampling, normalization, and performance related to the challenge of loading such large and numerous images into memory for training.

Computer Vision Spring 2019

Stereo Correspondence **PyMaxflow, Numpy, Open CV**

Implemented a graph-cut energy minimization stereo correspondence algorithm. Stereo vision attempts to recover depth information from a pair of aligned images. Under assumptions of epipolar geometry, a sum of squared differences approach was initially implemented as a baseline result. A more complex algorithm required formalizing a derivation of the displacement maps using an energy minimization approach to be solved as a graph cut. Results were compared with contemporary literature and contrasted with the approaches implemented in this project.

Work Experience

Pyramid Systems Sept 2019- Data Scientist

Pyramid Labs **Data Scientist** **Python, PyTorch, AWS SageMaker, Machine Learning**

Supported all phases of the data analytics lifecycle during a technical challenge for Pyramid Systems. Supported bid and proposal efforts and represented Pyramid Systems in interviews with the Government's CoE. Developed machine learning solutions for a Tech Challenges leveraging AWS services, including SageMaker, to deploy production ready models to integrate with a full-stack web application. Used transfer learning and a transformer architecture to rapidly prototype this solution and facilitate unsupervised text-similarity measures. Cross trained with the engineering team to share knowledge and served as a resource for colleagues engaged in self-study in Machine Learning.

HUD FHA **Data Scientist** **UML, Requirements Gathering, Sprint Planning**

Engaged with government clients as part of an Agile requirements gathering process for a major overhaul of HUD mortgage underwriting on an aggressive timeline. Developed data model diagrams, state model diagrams, and other UML requirements artifacts to facilitate the requirements discovery process. Architected forward-looking database solutions for the project to facilitate future integration with AWS SageMaker. Supported full stack application development in the AWS ecosystem.

AgencyQ Aug 2018 - Feb 2019 Full Stack Developer

Office of Science **Developer** **ASP.NET, Sitecore, MVC, Python, Scikit-Learn, Watson**

Expanded the scope of solutions AgencyQ is able to offer clients by engaging in an unsupervised learning research task. Presented findings to colleagues to promote innovation and the advancement of artificial intelligence offerings as a value add for clients. Implemented a jupyter notebook investigating the possibility of using Watson-returned NLP data to generate unsupervised clusters of content for the purpose of user segmentation and user-specific content recommendation.

Intellihot **Developer** **ASP.NET, MVC, Kentico**

Rapidly onboarded to a new project and environment and resolved a critical blocker for team members on a time sensitive at-risk project. Established client trust and confidence in AgencyQ by rapidly implementing an advanced prototype in order to demonstrate the feasibility of a Kentico migration which would reduce content management overhead for the client and facilitate more rapid content editing.

ICF International 2012-2018 Data Scientist (2016-2018), Web Developer (2012-2016)

RALI Colombia **Developer** **MVC, Java, Spring Framework, PL/SQL, R**

Engaged with a small team to forge an expedited full-stack architectural prototype for a big-data greenhouse gas accounting system. Implemented the solution for the government of Colombia to be compliant with the reporting requirements of the Paris Climate Accords. Expanded functionality to include seamless application integration with stored procedures and potentially complex R scripts. Collaborated with business development colleagues in finalizing deployment documentation and laid the groundwork for an expanded relationship between ICF and primary stakeholders.

CLEER **Principal Developer** **ASP.NET, MVC, C#, Entity Framework, T-SQL, jQuery**

Ensured a healthy ongoing client relationship on a tight budget with a limited team. Set goals, managed expectations, and formulated implementation plans through a modified agile scrum framework. Using a diverse set of technologies, synthesized an approach to resolve a longstanding set of performance bottlenecks.

Navy CDH **Developer** **ASP.NET, MVC, C#, NHibernate, Entity Framework, T-SQL**

Developed website functionality, facilitated deployments, and wrote security implementation reports for a complex subsidy management application. Using an Agile Scrum approach, worked closely with a team of dedicated developers in daily standup meetings over the course of development sprints. Led development on several key site features, integrating them with existing functionality and site architecture.