NICHOLAS PAYNE

Data Scientist

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EDUCATION

MS Applied Mathematics

Iowa State University

2014 - 2016 Ames, IA

CGPA: 3.84/4.0

BS Mathematics

Iowa State University

2011-2014 Ames, IA

CGPA: 3.64/4.0

WORK EXPERIENCE

Data Scientist

Caterpillar Inc.

July 2017- Present Peoria, IL

- Graduated from the Analytics Professional Development Program (2019)
- Gained experience in building machine learning models using various frameworks in Python for random forest regressions models, reinforcement learning models, and various deep learning models for computer vision applications
- Designed an automated data ingestion and grooming pipeline managed by docker-compose to index and organize data which included deep learning object detection modeling for tagging datasets with desired information
- Designed an EDA web application with streamlit to explore the data ingested with above-mentioned data pipeline
- Designed database schema and data hierarchy/storage standards for commonizing on data-related practices in the perception space at Caterpillar
- Co-developed Python library for interfacing with Caterpillar machines which allows for programmatic commands to be given to command machine movement which includes automatic data gathering, real-time visualization, and analysis
- Built a data storage prototype utilizing MySQL and Flask to centralize telematics and kinematics data storage and data access across many projects
- Utilized Docker for portability of machine learning pipelines as well as data preprocessing pipelines

Head of Staff

Summit Ministries

Summers of 2015-2017 Manitou Springs, CO

- Oversaw staff of 35-45 camp counselors and 180 students for 2-week conferences during the summers
- Coached counselors in discussion facilitation, job duties, and techniques for handling sensitive issues such as student misconduct
- Led efforts to find solutions for situations with disgruntled students and/or parents
- Gained valuable leadership skills in the areas of personal connection, adaptation, critical thinking, and situation analysis

CERTIFICATES

- Fundamentals of Deep Learning for Computer Vision | *Nvidia*
- Convolutional Neural Networks | *Coursera*

LOOKING FOR

A team of other disciplined students and tenacious learners who look for ways to improve their lives through automation and love working with data to make data-driven value-added decisions.

TECHNICAL SKILLS

Python

- *Data Science* | Pandas, Numpy, Scipy, Sqlalchemy
- *Computer Science* | Multiprocessing, Python-rq
- *Machine Learning / Deep Learning Frameworks* | Keras / Tensorflow, PyTorch with APex and AMP, SciKit-Learn
- *Exploration* | Streamlit, Jupyter Notebooks
- *Viz* | Plotly, Matplotlib, Seaborn, Hvplot
- *Versioning* | MLflow

Machine Learning

- Standard supervised and unsupervised classification and regression techniques supported by SciKit-Learn
- Computer Vision applications such as image classification and object detection using single-shot detectors such as RetinaNet with ResNet backbones for on-board and off-board deployment
- Accelerated hardware utilization

SQL

- Schema design and data modeling
- *Databases* | MySQL, Oracle, MS SQL Server
- Python API design utilizing *sqlalchemy*

Containerization

- Docker
- Docker-compose

Visualization

- Some experience with dashboard frameworks in Python such as *Dash* or *Visdom*
- Basic Tableau experience
- Experience building EDA tools with *streamlit*

Miscellaneous

- Linux
- SSH and remote deployment/development
- PyCharm IDE
- LaTeX
- **git**

- Structuring Machine Learning Projects | *Coursera*
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization | *Coursera*
- Neural Networks and Deep Learning | *Coursera*
- Python Programmer | *Data Camp*
- Data Scientist with Python | *Data Camp*

CONFERENCES

- Nvidia GPU Technology Conference 2019 & 2020
- Hackillinois 2018

PUBLICATIONS

- **Properties Preserving Schemes for a Kinetic Eikonal Equation** | *J. Comput. Phys. 331(2016)*
- **An asymptotic method based on a Hopf-Cole transformation for a kinetic BGK equation in the hyperbolic limit** | *J. Comput. Phys. 341: 295-312 (2017)*
- **A Hopf-Cole transformation based asymptotic method for kinetic equations with a BGK collision operator in the large scale hyperbolic limit** | *Iowa State University Graduate Theses and Dissertations. 15788.*

PATENTS

- **filed** | Excavator Control Mapping System
- **filed** | Vision Based Object Detection Alarm Snooze Strategy for Rotating Machines

HOBBIES

Whisky tasting and cigar pairing
Enjoying a nice dram

Theology
Ancient Near Eastern Cosmology as the roots for Biblical exegesis

Volleyball
Because ball is life

Travelling
From the beaches of Barbados to the green hills of Ireland

Disc Golf
Olympics 2024. You heard it here first

STRENGTHS

Active Learning | Leadership | Analytical Thinking | Conflict Resolution | Flexibility and Adaptability

REFERENCES

Fiona O'Laughlin | Analytics Manager | Caterpillar Inc.
@ olaughlin_fiona_j@cat.com
309 494 5925

Benj Hodel | Engineering Specialist | Caterpillar Inc.
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309 578 4527

All models are wrong, some models are useful