

# 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

- Graduate of the Analytics Professional Development Program
- Build machine learning pipelines using various frameworks in Python for random forest regressions models, reinforcement learning models, and various deep learning models for computer vision applications
- 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
- Build data storage prototype utilizing MySQL and Flask to centralize telematics and kinematics data storage and data access across many projects
- Utilize 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
- 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

## 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
- Computer Science | Multiprocessing
- 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 APIs

### Containerization

- Docker

### Visualization

- Experience with dashboard frameworks in Python such as Dash or Visdom
- Basic Tableau experience

### Miscellaneous

- Linux
- SSH and remote deployment/development
- PyCharm IDE
- L<sup>A</sup>T<sub>E</sub>X
- git

## 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

## 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.  
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Benj Hodel | Engineering Specialist |  
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