# NICHOLAS PAYNE

#### **Data Scientist**

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Peoria, IL github.com/nicpayne713



### **EDUCATION**

### MS Applied Mathematics

#### **Iowa State University**

**2014 - 2016** 

Ames, IA

CGPA: 3.84/4.0 **BS** Mathematics

**Iowa State University** 

**2011-2014** CGPA: 3.64/4.0 Ames. IA

## 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, Hyplot
- 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

## SOL =

- 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 A
- SSH and remote deployment/development
- PyCharm IDE
- ETFX
- 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 | lowa State University Graduate Theses and Dissertations. 15788.

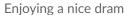
### **PATENTS**

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

### **HOBBIES**



Whisky tasting and cigar pairing





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



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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**3** 309 494 5925

#### Benj Hodel | Engineering Specialist | Caterpillar Inc.

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