NICHOLAS PAYNE

Data Engineering/Science

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CATERPILLAR, INC.

Sr. Data Scientist/Analytics Project Leader
Group: Remanufacturing

📅 February 2021-Present 📍 Remote

- Build ETL pipeline solutions with Python and Kedro targeting Docker deployment on AWS Batch with Snowflake and S3 data stores
- Manage AWS infrastructure including S3, Batch, ECS, Sagemaker, CloudWatch, and EventBridge
- Coach data scientists on my team in clean coding, best practices such as git, advanced python coding for data engineering, and Kedro pipeline deployment
- Manage Azure Build Pipelines and help enable/mature our CI/CD strategy
- Build Streamlit apps for visualizing and exploring data with customers to guide our Kedro pipeline development

Data Scientist/Design Engineer
Groups: Excavation Division & Integrated Components and Solutions

📅 January 2019-February 2021 📍 Mossville, IL

- Co-authored Python library for interfacing with controls software of Caterpillar Excavators for automated data gathering and ML activities
- 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 Exploratory Data Analysis (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
- 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

Data Scientist 2
Group: Information Analytics

📅 July 2017-January 2019 📍 Peoria, IL

- Graduated from the Analytics Professional Development Program (2019)
- Worked on Scrum team following Agile development

LOOKING FOR

A team of other disciplined students and tenacious learners who continuously look for ways to improve their live by striving for excellence in their respective passions.

TECHNICAL SKILLS

🐍 Python

- ≡ *Pipeline* | Kedro
- ⚙ *Data Science/Engineering* | Pandas, Numpy, Scipy, Sqlalchemy
- *Machine Learning / Deep Learning Frameworks* | Keras / Tensorflow, PyTorch with APex and AMP, SciKit-Learn
- *Machine Learning / Deep Learning Algorithms* | Standard sk-learn techniques, object detection + classification
- 👁 *Exploration* | Streamlit, Jupyter Notebooks
- *Viz* | Plotly, Matplotlib, Seaborn, Hvplot
- *Versioning* | MLflow, git

🗄 SQL

- Schema design and data modeling
- *Databases* | MySQL, Oracle, MS SQL Server, Snowflake

🐳 Containerization

- 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
- Remote deployment/development
- Vim is the superior editor
- LaTeX
- git

q: Which came first, the phoenix or the egg?

- 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
- Became certified on the C3.IoT (now: C3.ai) platform for a data platform initiative at Cat

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*

CONFERENCES

- vim.conf 2021
- 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

🖥 **Home-labbing**
Self host all the things!

⚙ **Theology**
Ancient Near Eastern Cosmology as the roots for Biblical exegesis

🏐 **Volleyball**
Because ball is life

🥏 **Disc Golf**
Olympics 2024. You heard it here first

STRENGTHS

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

REFERENCES

Available on request

a: A circle has no beginning