Akshay Kale

Data Science | Explainable Artificial Intelligence | Research

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SKILLS

LANGUAGES

Python • R • C • C++
Java • MLflow • LaTeX

TOOLS AND FRAMEWORKS

SkLearn • PyTorch • Keras Tensorflow
GGplot • Plotly • Seaborn
PostgreSQL • MongoDB
Matplotlib • Git • Unix
Microsoft Visual Studio
Vim • Jupyter Notebook

EDUCATION

PH.D. CANDIDATE

Computer Science,
University of Nebraska at Omaha
August 2019 - Present

MASTER OF SCIENCE

Computer Science,
University of Nebraska at Omaha
August 2016 - May 2019

COURSEWORK

GRADUATE

Statistical and Machine Learning Statistics Data Storytelling Deep Learning Database Management Data Structures and Algorithms

AWARDS

Best Visualization, Datapalooza 2019
Best Speaker, PIIT, India
Research Scholarship, University of Nebraska
Advantage Scholarship, University of Nebraska

SUMMARY

- 5+ years of academic research experience with publications
- Best Visualization award at Datapalooza 2019
- Mentor for master's research students in Explainable AI at UNO

TRANSFERABLE SKILL

Machine Learning Engineer University of Nebraska

January 2017 - Present | Omaha, NE

- Skilled in implementing diverse machine learning models, including supervised, unsupervised, and reinforcement learning
- Proficient in developing web crawlers for efficient data collection
- Experienced in designing end-to-end processes for data management using Python and MongoDB
- Developed interpretable methods for assessing and selecting appropriate machine learning models
- Presented research findings at conferences, highlighting explainable AI and data science applications

SELECTED PROJECTS

Toward Interactive Visualizations for Explaining Machine Learning Models

XAI | Conference | ISCRAM 2023

- Built a machine learning model with 95% AUC to predict future bridge component maintenance for 120,000 Midwest bridges
- Developed an interactive tool using Python, MongoDB, and d3.js to explain and visualize machine learning models and their rules
- Designed a tool to visualize variable interactions for identifying bridge maintenance

A Comparative Assessment of Bridge Deck Wearing Surfaces: Performance, Deterioration, and Maintenance

XAI | Journal | Applied Sciences 2023

- Developed a tree-based machine learning model in Python (using libraries like sklearn, xgboost, and lgboost) to predict future bridge component maintenance of over 15,000 bridges, considering various wearing surfaces on the bridge deck
- Created metrics for measuring the deterioration and performance of bridge components
- Devised a method to identify bridge maintenance needs using inspection survey records

New measure to understand and compare bridge conditions based on inspections time-series data

Data Science | Journal | Journal of Infrastructure System (ASCE) 2021

- Designed and implemented performance metrics for 600,000 bridges across the USA, leveraging extensive inspection records spanning 17 million entries
- Developed end-to-end data workflows, encompassing extraction, cleaning, processing, and management, utilizing Python and MongoDB
- Conducted in-depth statistical analyses to discern key influential factors impacting bridge maintenance performance