

Nikhil Ostwal

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Work experience

Associate Researcher

Feb 2023 - July 2023

(InfAI) Instituts für Angewandte Informatik

- Conducted thorough research into cutting-edge reinforcement learning techniques tailored for healthcare applications.
- Seamlessly integrated diverse medical datasets for model training and testing, while meticulously applying robust data preprocessing steps encompassing imputation, cleaning, and feature engineering within the Postgres framework.
- Translated theoretical research into practical implementation by employing TensorFlow, PyTorch, OpenAI Gym, and Scikit-learn to build, train, and meticulously evaluate reinforcement learning models.
- Collaboratively engaged with medical domain experts to identify pivotal variables, determine their ranges and impacts, and leverage this expertise to tailor the learning model, substantially enhancing its overall efficacy.
- Delivered insights to both technical and non-technical stakeholders through impactful data visualizations and persuasive presentations.
- Ensured the seamless sharing of knowledge by meticulously documenting methodologies, discoveries, and the codebase, facilitating future replication.
- Adapted and refined algorithms through iterative cycles, benchmarking against new data and incorporating feedback, culminating in optimized performance.

Intern

Oct 2022 - Feb 2023

iNeuron Intelligence

- Developed machine learning models for e-commerce and finance domains, leveraging techniques such as supervised and unsupervised learning to solve complex business problems.
- Conducted extensive exploratory data analysis (EDA) on large-scale datasets, identifying key patterns, trends, and insights to drive decision-making and optimize business processes.
- Implemented robust data preprocessing and cleaning methodologies, including handling missing values, outlier detection, and data normalization, to ensure high-quality and reliable input for machine learning models.
- Applied feature engineering techniques to extract and transform relevant features, enhancing the predictive power and performance of machine learning models.
- Used model selection, evaluation, and hyperparameter tuning, utilizing techniques such as cross-validation and grid search to optimize model performance and generalize well to unseen data.
- Utilized Docker to package and deploy machine learning models, ensuring consistency and reproducibility across different environments.
- Successfully deployed machine learning solutions as WebApp using Streamlit on the Heroku cloud platform, enabling seamless integration and accessibility for end-users.

Master Thesis Student

Mar 2022 - Sep 2022

Computer Networks Group, Universität Paderborn

- Topic: Deep Multi-Agent Reinforcement Learning Algorithms for Continuous Control under Lossy and Delaying Communication
- Performed a simulative comparison using Multi-agent Reinforcement Learning (MARL) algorithms to understand the convergence and learning behavior of agents communicating under a wireless network network prone to delays and losses.
- The intermediate goals/tasks included:
 - Literature review of state-of-the-art RL concepts and algorithms (MDP, Q-learning, Policy Gradient Methods)
 - Implemented MARL algorithms in Tensorflow, used Open AI Gym Environments for experiments
 - Implementation of a delaying Communication Model between agents
 - Hyper-parameter tuning

Education

Masters of Science 2018-2022

Universität Paderborn, Germany

Computer Science

Specialization: Intelligence and Data

Bachelor of Technology 2014-2018

SRM University, India

Computer Science and Engineering

Skills

Deep Learning



TensorFlow, PyTorch, NLTK, Spacy, OpenCV, Scikit-learn

Data Analysis



Panda, Numpy, MySQL, Matplotlib, Seaborn, R, Power BI, BeautifulSoup

Python Development



Django, Flask, PostgreSQL, AWS, Docker, DynamoDB, Streamlit

Other Programming Lang.



C++, HTML, CSS, JavaScript

Project management



Agile, Scrum, Jira, Slack, Teams, Git CI/CD

Certifications

- Deep Learning A-Z™: Hands-On Artificial Neural Networks (Udemy)
- Reinforcement Learning: Qwik Start (Coursera)
- The Python Mega Course: Build 10 Real-World Applications (Udemy)
- Ultimate AWS Certified Solutions Architect Associate SAA-C03 (Udemy)

Seminars

- An Efficient Approach For Knowledge Graph Construction And Predicate Mapping
- Communication-Efficient Learning of Deep Networks from Decentralized Data

- Visualization and interpretation of results

Trainee

June 2017 - July 2017

KVCH Pvt. Ltd.

- Utilized the Twitter API to gather real-time tweets based on specific keywords and hashtags.
- Configured Apache Flume to efficiently collect and store the incoming tweet data into Hadoop Distributed File System (HDFS).
- Employed Hadoop MapReduce for data processing, including text preprocessing and sentiment analysis.
- Applied sentiment analysis libraries to assign sentiment scores to each tweet.
- Categorized tweets into positive, negative, or neutral sentiment categories and analyzed sentiment trends over different time intervals.
- Utilized data visualization tools to create insightful graphs and charts representing sentiment changes and trends.

Language Competence

- English: Business Fluent (C2)
- German: B2
- Hindi: Mother Tongue

Tools / IDE

Eclipse, VS Code, Jupyter, Omnet++, Sumo, Venv, Git

Other Interests

Astronomy, Hiking, Music

Other Projects

End-to-End Chicken Disease Classification using Image Classification

Personal Project

- Established a GitHub repository for version control and collaborative development.
- Designed structured project template, managed prerequisites, and installed required packages.
- Orchestrated streamlined data workflows, including base model preparation and callbacks.
- Executed model training and evaluation, integrating DVC for efficient pipeline tracking.
- Implemented a user-friendly frontend using Flask, enhancing project accessibility.
- Achieved seamless deployment using Docker containers and CI/CD on AWS.

Distributed Urban Drone Environment (DUDE)

Oct 2019 - Sep 2020

Group Project

Paderborn University, Heinz Nixdorf Institute (HNI)

- Led a sub-group, effectively coordinating tasks and fostering collaboration.
- Developed a comprehensive drone simulator using VEINS and SUMO.
- Developed an advanced Obstacle Avoidance Algorithm for drones in Omnet++.
- Simulated intricate car traffic patterns, leveraging real-world data for Las Vegas.

An Efficient Approach to Predict Rain-

Jan 2018 - June 2018

WaterHarvesting And Plantation Sites In India

Machine Learning

SRM University

- Gathered and consolidated rainfall data spanning 60 years from diverse regions across the country.
- Preprocessed the historical data to ensure consistency and eliminate inconsistencies.
- Employed Python's machine learning libraries to design and train a predictive model.
- Utilized the trained model to predict sites in the future with a high likelihood of receiving substantial rainfall.
- Identified potential locations for rainwater harvesting and plantation sites based on predictive outcomes.