

Naga Sai Pranay Modukuru



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SKILLS

Programming Languages	Python, C/C++, MATLAB, Julia, SQL, HTML, CSS
Machine Learning Skills	Supervised Learning (Linear Regression, Logistic Regression, Decision Tree, Random Forest, Gradient Boosting, Naive Bayes), Unsupervised Learning (K-Means, Hierarchical clustering), Deep Learning (MLP, CNN, LSTM, RNN, Autoencoders), Computer Vision
Technical Skills	Digital Signal Processing, Microcontroller-based Systems
Tools and Technologies	Cloud Computing (AWS – SageMaker, Lambda, S3, IBM – Watson Studio), BigData-Parallel Processing (Spark), Container-based applications (Docker), Version control & CI – (Git , GitHub), MATLAB/Simulink , LabVIEW , MS Office, Windows, Linux (Ubuntu)
Python Libraries/Frameworks	PyTorch , TensorFlow , Keras , Numpy, Pandas, PySpark , Streamlit, Scikit-Learn , SciPy, StatsModels, XGBoost, OpenCV , Plotly, Flask
Languages	English (Fluent), German (Intermediate), Hindi (Native), Telugu (Native)

PROFESSIONAL EXPERIENCE

- **Research Assistant – Machine Learning** **Aug. 2019 - Present**
Fachhochschule Suedwestfalen **Soest, Germany**
 - Devised machine learning algorithms for computer vision, industrial process monitoring, and predictive maintenance
 - Managed a team of five members to build and maintain feature extraction pipelines and visualization dashboards for raw sensor measurements of a metal production process
 - Performed extensive data analysis for reducing manufacturing downtime and research on remaining useful life prediction of industrial equipment
 - Designed and implemented a novel nonlinear-convolutional layer for robust feature extraction for computer vision and time-series analysisTools: Python, PyTorch, Pandas, Streamlit, Plotly
- **Master Thesis** (Grade: 1.0) **Dec. 2019 – Jun. 2020**
Fachhochschule Suedwestfalen **Soest, Germany**
 - Title: "Enabling Lifelong Learning in Neural Networks with Gradient Monitoring and Dynamic Architectures"
 - Developed a novel regularization technique to reduce performance loss on older tasks from 6.5% to 1.0% in a sequential task learning setting
 - Devised an algorithm to evolve multi-headed neural networks to accommodate new categories in data on computer vision and process monitoring tasksTools: Python, PyTorch
- **Teaching Assistant** **Feb. 2019 – Jul. 2019**
Fachhochschule Suedwestfalen **Soest, Germany**
 - Conducted lab sessions and prepared course content for modules 'Control Engineering' and 'Machine Learning'Tools: Python, Keras, TensorFlow, MATLAB, Simulink
- **Data Scientist** **Sep. 2019 – Dec. 2019**
Freelance - Worked for an Insurance firm with three other team members **Soest, Germany**
 - Trained and deployed a deep learning model in a web-app to predict probable diseases for customers and the pertaining costs for the firm with 74% accuracy based on customer demographic data and medical historyTools: Python, Keras, TensorFlow, Flask, HTML

EDUCATION

- **M.Sc. in Systems Engineering and Engineering Management (Grade: 1.6)** **Apr. 2018 – Jun. 2020**
Fachhochschule Suedwestfalen **Soest, Germany**
- **B.Tech. in Electrical and Electronics Engineering (Grade: 1.6)** **Sep. 2013 – Apr. 2017**
Jawaharlal Nehru Technological University **Hyderabad, India**

FURTHER EDUCATION

- Machine Learning Engineer Nanodegree
- Deep Learning Specialization

Udacity
deeplearning.ai, Coursera

ACHIEVEMENTS

- **AI Challenge Days 2020 – Hackathon, AI Community OWL, Fraunhofer IOSB-INA, Lemgo** Jun. 2020
 - Part of the winning team of a machine learning-based industrial anomaly detection hackathon
 - Invited for project realization and highly regarded for an out-of-the-box approach to problem-solving
- **Hack the Building – Hackathon, Fachhochschule Suedwestfalen, Luedenscheid** Nov. 2019
 - Participated in a machine learning and IoT-based smart building hackathon

PROJECTS

- **Rotor Temperature Prediction** Tools: Python, PyTorch
 - Trained a convolutional neural network on time-series sensor data of a Permanent Magnet Synchronous Motor and achieved an R2 Score of 0.98 in predicting the rotor temperature
 - The predictive model has the potential to reduce the mounting equipment on a motor to replace traditional sensors
- **Fault Detection and Identification using Machine Learning** Tools: Python, Scikit-Learn, Keras
 - Detected faults in an industrial chemical process with machine learning methods such as Support Vector Machines, Decision Trees and Deep Neural Networks
- **Morse Code Decoder** Tools: C, MATLAB, LabVIEW
 - Used digital signal processing techniques like FFT to filter a noisy signal and developed a C algorithm to decode a modulated Morse signal
- **Microcontroller-based Temperature Controller** Tools: C, AVR Studio, AVR ATmega128, LabVIEW
 - Deployed an algorithm on AVR ATmega128 Microcontroller to control the nonlinear behaviour of the temperature of an oven
- **Hand Gesture Detection** Tools: Python, OpenCV, PyTorch
 - Trained a convolutional neural network on images collected using OpenCV and to detect hand gestures
 - Extending the approach to accommodate 2D key point-based gesture detection to improve the accuracy and robustness of the model
- **Sentiment Analysis App** Tools: Python, AWS SageMaker, Lambda, PyTorch
 - Trained and deployed an LSTM-based sentiment analysis model on AWS SageMaker as a Lambda function
 - Designed a web-app to interact with the deployed model through API-Gateway
- **Customer Segmentation and Acquisition** Tools: Python, Scikit-Learn, XGBoost
 - Used unsupervised K-Means clustering to segment the general population in Germany and compared it with the demographics of an online retailer's customers
 - Secured a position within the top 30 percentile in a Kaggle competition to target potential customers using supervised learning algorithms

HOBBIES AND INTERESTS

- Playing Cricket – Member of Soest Cricket Club, played and volunteered for coaching an intercultural team
- Technical Writing – Writing articles on machine learning and data science
- Travel & Photography