Naga Sai Pranay Modukuru

Address: Unterhaching 82008, Munich, Germany

Date of birth: 26.03.1996   **Nationality**: Indian

Email: pranaymns@gmail.com   **Phone**: +49 17660777383

LinkedIn: linkedin.com/in/pranaymodukuru   **GitHub**: github.com/Pranaymodukuru

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 analysis

  Tools: 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 tasks

  Tools: 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 history

  Tools: Python, Keras, TensorFlow, Flask, HTML

EDUCATION

- **M.Sc. in Systems Engineering and Engineering Management (Grade: 1.67)**   Apr. 2018 – Jun. 2020

Fachhochschule Suedwestfalen   Soest, Germany

- **B.Tech. in Electrical and Electronics Engineering (Grade: 1.60)**   Sep. 2013 – Apr. 2017

Jawaharlal Nehru Technological University   Hyderabad, India

FURTHER EDUCATION

- **Machine Learning Engineer Nanodegree** **Udacity**
- **Deep Learning Specialization** **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