

Naga Sai Pranay Modukuru

Date of birth : 26.03.1996

Nationality : Indian

Address : Soest, NRW 59494, Germany

Mobile : +49 17660777383

Email : pranaymns@gmail.com

Linkedin : <https://www.linkedin.com/in/pranaymodukuru>

Github : <https://github.com/Pranaymodukuru>



EDUCATION

- **Master of Science in Systems Engineering and Engineering Management** Apr. 2018 - Present
Fachhochschule Südwestfalen Soest, NRW, Germany
 - **Focus areas:** Machine Learning and Artificial Intelligence, Signal Processing, Microprocessor-Based Systems, Business in Engineering
- **Bachelor of Technology in Electrical and Electronics Engineering** Sep. 2013 - Apr. 2017
Jawaharlal Nehru Technological University Hyderabad, India
 - **Focus areas:** Microcontrollers and Microprocessors, Neural Networks and Fuzzy Logic, Control Systems, Power Electronics, Analog Electronics

EXPERIENCE

- **Master Thesis** Dec. 2019 - May. 2020
Fachhochschule Südwestfalen Soest, NRW, Germany
 - **Title:** "Enabling Lifelong Learning in Neural Networks with Gradient Monitoring and Dynamic Architectures"
 - Developed a novel regularization technique for reducing catastrophic forgetting in Sequential Multi-Task Learning
 - Devising an algorithm to train Multi-headed Neural Networks for Condition Monitoring on Industrial Datasets
Tools: *Python, PyTorch*
- **Research Assistant - Department of Automation Technology** Aug. 2019 - present
Fachhochschule Südwestfalen Soest, NRW, Germany
 - **Research:**
 - * Developed and Implemented a novel Nonlinear-Convolutional layer for robust feature extraction
 - * Evaluating performance of the developed layer on Process Monitoring and Remaining Useful Life estimation
 - **Data Analysis:**
 - * Analysing raw industrial data to depict relationship between different operation regimes of a metal production process
 - * Visualizing feature interactions to understand effects of one process on another
Tools: *Python, PyTorch, Pandas, Numpy, Matplotlib, Seaborn, Plotly*
- **Teaching Assistant - Control Systems and Neural Networks** Feb. 2019 - Jul. 2019
Fachhochschule Südwestfalen Soest, NRW, Germany
 - Preparation of course content for modules 'Control Engineering' and 'Machine Learning'
 - Conducted 'Control Engineering' Lab sessions for undergraduate students
Tools: *Python, Keras, MATLAB, Simulink*
- **Application Developer (Freelance)** Sep. 2019 - Dec. 2019
Continuum (Worked as part of start-up project) Zambia, Africa
 - Developed a Deep learning Application for an insurance firm to predict future costs for the firm and probable diseases for the customer
 - Performed Data Analysis to determine important features for making predictions
Tools: *Python, Keras, Flask, Tkinter*

FURTHER EDUCATION

- **Deep Learning Specialization** Jan. 2020 - Mar. 2020
deeplearning.ai, Coursera
 - **Focus areas:** Neural Networks and Deep Learning, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models
- **Machine Learning Scientist and Data Scientist with Python** May 2019 - Dec. 2019
DataCamp - Career tracks
 - **Focus areas:** Machine Learning, Data Science, Data Analysis, Data Visualization, Python

SKILLS

- **Industry Knowledge:** Deep Learning, Machine Learning, Computer Vision, Signal Processing, Image Processing, Natural Language Processing (NLP), Microcontrollers
- **Programming Languages:** Python, C/C++, MATLAB, SQL, HTML, CSS
- **Tools and Technologies:** Git, Github, Cloud Computing (AWS - SageMaker, Lambda, S3), Docker, LabVIEW, Arduino, Raspberry Pi, AVR Studio, PSpice
- **Operating Systems:** Windows, Linux (Ubuntu)
- **Languages:** English, German, Hindi, Telugu
- **Python Libraries and Frameworks:** PyTorch, TensorFlow, Keras, PySpark, Scikit-Learn, SciPy, XGBoost, OpenCV, Numpy, Pandas, Matplotlib, Seaborn, Plotly, Flask, SQLAlchemy, Tkinter

PROJECTS

- **PMSM Rotor Temperature Prediction:** Trained a Convolutional Neural Network (CNN) on Time-Series sensor data of a Permanent Magnet Synchronous Motor (PMSM). Achieved an R2 Score of 0.98 in predicting the rotor temperature under different operating conditions. Tools: *Python, PyTorch*
- **Soft Sensor Development:** Used Machine Learning to predict process variables in Tenesse Eastmann Process, which are usually measured with sensors. Trained Support Vector Machines, Decision Trees and Deep Neural Networks to predict the component measurements. Tools: *Python, Scikit-Learn, Keras*
- **Denoising Autoencoder:** Removed coffee stains, folds, footprints and wrinkles from scanned documents using a Convolutional Neural Network (CNN)-based Autoencoder. Trained a CNN-Autoencoder on Noise Office Dataset. Tools: *Python, PyTorch, OpenCV*
- **Hand Gesture Detection:** Trained a Convolutional Neural Network (CNN) on hand gestures by collecting training data using OpenCV and a laptop's webcam. Tools: *Python, PyTorch, OpenCV*
- **Morse Code Decoder:** Designed a Digital Filter to remove noise from a modulated signal and implemented an algorithm to decode the filtered signal. Tools: *C, MATLAB, LabVIEW*
- **Microcontroller-based Temperature Controller:** Used an AVR ATmega128 Microcontroller to control the temperature of an oven. Designed an algorithm in C to control the nonlinear behavior of the temperature. Tools: *C, AVR Studio, AVR ATmega128, LabVIEW*