Sai Krishna Reddy Mulakkayala

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Summary

Curious and driven data science professional with a passion for solving real-world problems using machine learning, deep learning, and NLP. I've worked on projects ranging from image classification and generative models to text mining and reinforcement learning—translating data into meaningful insights and smart solutions. With hands-on experience in Python, TensorFlow, PyTorch, and Scikit-learn, I enjoy experimenting, collaborating, and continuously learning. I'm now looking for a role where I can bring both technical skill and creative thinking to build impactful, data-driven products.

Technical Skills

Programming Languages: Python, C++, SQL, MATLAB

Deep Learning & ML Frameworks: TensorFlow, PyTorch, Keras, Scikit-learn

DevOps & Deployment Tools: Kubernetes, Docker, Jenkins (CI/CD), Ansible, Git, GitLab

Web Technologies & APIs: Spring Boot, RESTful API

Database Systems: Oracle, MySQL

Libraries & Tools: NumPy, Pandas, OpenCV, NLTK, CMDB, Groovy, VS Code, Jira

Platforms: Linux, Windows

Visualization: Power BI

Projects

Image Classification & Analog Clock Time Prediction
Deep Learning *Python, Keras, CNN*

Developed neural network models (MLP and CNN) in Keras for image classification tasks (Fashion MNIST, CIFAR-10) and for predicting analog clock time from images.

Optimized hyperparameters to improve accuracy; introduced a coordinate-based regression approach that achieved high precision in clock time prediction.

Generative Models and Sequence Modelling
Deep Learning *Python, Keras, VAE, GAN, RNN, LSTM*

Implemented VAE and GAN to synthesize images (e.g., anime faces) and built encoder–decoder RNNs for simple arithmetic sequences under text-to-text, image-to-text, and text-to-image modalities.

Fine-tuned model parameters; achieved ∼99% accuracy on text-to-text arithmetic with LSTM; built a CNN-encoder + RNN-decoder captioning model with slightly lower accuracy than text-only methods.

Modeling Chemotherapy-Induced Apoptosis using Stochastic Petri Nets
Bioinformatics, Computational Biology, Data Science *Python, SPN, Monte Carlo, Sensitivity Analysis*

Developed a detailed SPN model to simulate the intrinsic apoptosis pathway in cancer cells, integrating effects of Doxorubicin and Cisplatin.

Incorporated molecular interactions including p53 signaling, Bax/Bcl-2 dynamics, ROS, and caspase activation across 14 species with key feedback loops.

Ran Monte Carlo simulations and dose–response analyses; found Cisplatin induces faster apoptosis than Doxorubicin and combination therapy yields synergistic efficacy.

Performed sensitivity analysis identifying p53 activation, Bax activation, and ROS-induced mitochondrial disruption as critical determinants of timing.

Implemented simulations and visualization in Python to guide drug-combination insights and quantify stochastic variability in cell fate.

Archaeological Text Named Entity Recognition
Text Mining *Python, CRF, NER*

Built an NER system to extract archaeological entities (locations, time periods, cultures) from text.

Used a Conditional Random Field with tuned hyperparameters; achieved F1 $\approx$ 0.81 on the task.

Adverse Drug Event NER (CADEC Corpus)
Text Mining *Python, BioBERT, CRF*

Compared CRF and BioBERT for adverse drug event detection on CADEC; applied thorough preprocessing and biomedical embeddings.

Fine-tuned BioBERT achieved high overall F1 ($\sim$91%), outperforming the CRF baseline; analyzed class-imbalance challenges.

Advanced Reinforcement Learning on CartPole
Reinforcement Learning *Python, Gym, DQN, REINFORCE, A2C, PPO*

Implemented and compared DQN, REINFORCE, A2C, and PPO on CartPole-v1.

Enhanced DQN with Experience Replay and Target Networks for stable training.

Observed PPO converged faster and was more sample-efficient than value- or policy-only baselines.

Tuned hyperparameters and used advantage estimates to accelerate learning.

Experience

Junior Software Engineer Sep 2022 – Jul 2024
Netcracker Technology *Bangalore, India*

Triggered Jenkins CI/CD pipelines for deployment and environment setup.

Developed and modified Ansible playbooks per client requirements.

Worked with Kubernetes clusters to deploy and test applications.

Used Git for version control and contributed to deployment automation.

Education

Leiden University Leiden, Netherlands
M.Sc. in Data Science *Sep 2024 – Present*
National Institute of Technology Raipur Raipur, India
B.Tech in Electrical Engineering CGPA: 8.05/10 *Jul 2018 – May 2022*

Certifications

Microsoft Technology Associate: Introduction to Programming using Python