Sakib Mohammad

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US Lawful Permanent Resident

PROFESSIONAL SUMMARY

Data Scientist with a background in machine/deep learning, computer vision, and natural language processing. Skilled in training deep neural networks, explainable AI models, statistical analysis, and advanced data visualization for scientific and engineering applications.

TECHNICAL SKILLS

ML/DL: PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, NLTK, spaCy, HF Transformers.
Data Analysis: NumPy, Pandas, SciPy, Jupyter Notebook.
Data Visualization: Matplotlib, Seaborn, Plotly, Tableau, TensorBoard.
Cloud & Deployment: AWS, Google Colab, Gradio, Streamlit, HF Spaces.
Programming & Database: Python, MATLAB, C, SQL (PostgreSQL), Git.
Image Processing & Analysis: ImageJ, LasX.

EXPERIENCE

Research Assistant, **Mechanogenomics Lab, SIUC, Carbondale, IL** August 2021 – Present

- Trained DL and generative AI models (MLP, VAE, CVAE) to predict rheological properties ($R^2 = 0.89$) and generate material compositions for 3D-printed PAA hydrogels with statistical validation & deployed on HF Space.
- Fine-tuned CNN models (ResNet18, GoogLeNet, VGG11) to classify substrate stiffness (F1-score = 0.92) from phase-contrast images of HeLa and B16F1 cell lines, using Grad-CAM and LIME for interpretability.
- Achieved 97% accuracy and 69% mIoU for mesoderm cell classification and segmentation using InceptionV3 and U-Net with a DenseNet121 encoder from phase-contrast and nucleus images of OGRTR1 mouse stem cells.
- Utilized supervised model (InceptionV3+SVM) and unsupervised clustering (k-Means, Hierarchical clustering) to identify human pancreatic TRCs with 90% accuracy.
- Predicted thermo-mechanical properties of HGM-filled composite materials using Random Forest Regressor ($R^2 = 0.9$).
- Built XGBoost and CNN models (ResNet50, U-Net with ResNet34 encoder) for traction force prediction (MAPE = 4.96%) and substrate stiffness classification (Accuracy = 98%).
- Acquired and processed images using a Leica wide-field epifluorescence microscope and built diverse image datasets.

Research Assistant, **VLSI and RF Circuit Design Lab, SIUC, Carbondale, IL** April 2020 – July 2021

- Designed a binary multiplier using a modified shift-and-add algorithm in Cadence Virtuoso (GPDK 45nm) for optimized performance.

Teaching Assistant, **Department of ECE and EET, SIUC, Carbondale, IL** August 2019 – July 2024

- Mentored and supervised over 100 students in lab courses, providing guidance on projects, assignments, and research methodologies.

ADDITIONAL PROJECTS

- Developed ML models for plagiarism detection (cosine similarity) and sentiment analysis (Logistic Regression) of Amazon reviews (82% accuracy).
- Designed an LSTM-based time-series model for Apple stock forecasting (RMSE of 0.0153) and a bi-directional GRU with attention for neural machine translation (English to French).
- Projected the risk of heart disease from healthcare data with a k-NN predictor achieving 93% accuracy.
- Deployed BerryNet on Raspberry Pi 3 for real-time object detection and inference streaming.
- Enhanced misclassification detection in VGG models with confidence-based approaches (AUPR-Error improvement = 2.75%).

COURSES AND CERTIFICATIONS

Neural Networks, DNN Software Hardware Design, Edge Computing, PyTorch for Deep Learning, Digital Image Processing, The Complete SQL, Scikit-learn in Python, Understanding and Visualizing Data with Python, Data Science Math Understanding.

EDUCATION

Southern Illinois University Carbondale, Carbondale, IL May 2025 (Expected)
Doctor of Philosophy in Electrical and Computer Engineering (Focus: AI/Data Science) GPA: 4.00/4.00
Southern Illinois University Carbondale, Carbondale, IL July 2021
Master of Science in Electrical and Computer Engineering GPA: 3.96/4.00