Mostofa Najmus Sakib

Contact No: (208) 570-9365 | Email: mostofanajmussak@u.boisestate.edu | Boise, ID, USA
github.com/Mostofa-Najmus-Sakib | linkedin.com/in/mostofa-sakib/

Summary of Skills

Programming Languages: Python, Java, C#, SQL, JavaScript, C/C++, Shell, HTML, CSS, Matlab, R
Data Science: Statistical Analysis, EDA, Data Visualization, Probability Distributions, Hypothesis Testing, Bayesian Statistics, PySpark, Jupyter Notebook, Streamlit, Shapely, Tableau, Microsoft Power BI, Snowflake, BigQuery, AWS Redshift, Oracle, MSSQL
Machine Learning & AI: Linear Regression, Logistic Regression, SVM, Decision Tree, Random Forest, Naïve Bayes, K-Nearest Neighbors, K-Means, XGBoost, PCA, Ensemble Learning, Pandas, Numpy, Matplotlib, Scikit-learn, NetworkX, Lime, Shap, A/B Testing, RAG (Retrieval-Augmented Generation), RLHF (Reinforcement Learning from Human Feedback), Reward Modeling, Agentic AI (LangGraph, AutoGen), LLM Evaluation & Benchmarking, Model Quantization
Deep Learning & NLP: CNN, RNN, LSTM, GAN, Seq2Seq, Transformer Models (BERT, GPT), LLMs, Domain-Adapted LLM Training (pretraining, post-training on in-domain synthetic datasets), Encoder-Decoder, Recommender Systems, TensorFlow, Keras, PyTorch, Hugging Face, SpaCy, NLTK, CoreNLP, Word2Vec, GloVe
Computer Vision: YOLOv5, YOLOv8, U-Net, Mask R-CNN, Faster R-CNN, 3D CNNs, OpenCV, MediaPipe, OpenPose, image segmentation, detection
MLOps & Cloud: Git, GitHub, Bitbucket, Docker, Jenkins, Terraform, CI/CD (Cloud Build, Cloud Storage), Model Profiling & Optimization (ONNX, TensorRT), Model Deployment & Monitoring, GCP, AWS, Azure, Cloud ML Pipelines
Software Development: Flask, FastAPI, Microsoft Power Platform, Agile, Tkinter, Test Driven Development

Work Experience

Graduate Assistant | AI-based Security (AIbS) Lab, CS Department, BSU **Aug. 2021 – Present**

- Developing LLM and reinforcement learning based adversarial credibility drift attack methods that manipulate news to shift perceived credibility.
- Measuring impact on perceived news believability across social-media datasets and proposing detection & mitigation techniques against adversarial attacks.
- Built production-ready ML pipelines using graph neural network models with human evaluation, resulting in a **7%** improvement in news classification accuracy.
- Developed and publicized a novel dataset to understand people's perceptions of news.
- Designed customized ambivalence detection tools on health-related datasets.
- Architected and implemented a reusable NLP model that detects multiple sockpuppet accounts early on Wikipedia with just one edit, increasing detection efficiency by **5%**.
- Worked on developing readability models for children, incorporating lexical, syntactic features, and BERT fine-tuning that is roughly **10%** better in terms of accuracy and interpretability than the baseline.
- Improved search engine result pages by adding like, dislike, bookmark, and navigation icons for children, fostering interaction and resulting in twice the clicks from sixth graders.

Graduate Intern for the Application of AI/ML for Mobility Research and Analysis | National Renewable Energy Laboratory (NREL) **May 2025 -Aug 2025**

- Applied LLMs to identify sentiment, uncovering temporal and brand-specific shifts in public opinion toward autonomous vehicles driven by technological milestones and safety incidents.
- Built scalable pipelines for >1M social media comments with cloud-based archiving, enabling reproducible analytics at scale.

Machine Learning and Data Analytics Intern | Idaho Transportation Department **May 2024 -Aug 2024**

- Applied cutting-edge computer vision techniques to identify asphalt pavement segregation from satellite, cellphone, and drone images, achieving **90%** accuracy.
- Developed and deployed a Flask-based framework on Google Cloud to streamline file uploads, extract text from submitted forms, and automatically send the extracted information via email to engineers.
- Backend software development of "AASHTOWare Agency View." with C#, Python, and SQL.

Graduate Research Assistant | Civil Engineering Department, BSU **Aug. 2018 – July 2020**

- Developed an algorithm to differentiate between fraud and typing errors in construction datasets.

- Introduced a data-driven fraud detection pipeline and user interface for engineers and professionals to capture fraud incidents and overpayments on construction projects.

Education & Credentials

Ph.D. in Computing (Computer Science emphasis**) -** Boise State University (BSU), ID **Fall 2022 - Summer 2026**
Masters of Computer Science - BSU **Fall 2020 - Summer 2022**
Master of Science in Civil Engineering - BSU **Fall 2018 - Summer 2020**
Bachelor of Science in Civil and Environmental Engineering - IUT, Bangladesh **Jan 2012 - Dec. 2015**

Relevant Projects

Computer Vision for Infrastructure Defects | Python
- Built and deployed a CV pipeline (U-Net, YOLOv8) for asphalt pavement segregation detection from drone/satellite images.

Development of a search engine | Python
- Developed a search engine from scratch to translate the core IR concepts into practice.
- This standalone SE is capable of suggesting queries, identifying and ranking candidate resources, and generating snippets for top-matched resources.

Movie recommendation system | Python
- Build a content-based recommender system using the disney plus movies and tv shows dataset.

BERT fine-tuning | Python
- Classified the WOS dataset using torch with a hugging face BERT tokenizer and pre-trained transformer model.

Context-free grammar design | Python
- Generated context-free grammar for tamarian language with NLTK library to apply parts of speech tags instead of words.

Semi-optimal player for suspicion game | Java
- Optimized the game moves using uncertainty approaches.

Misinformation detection on social media datasets | Python
- Identified misinformation on social media datasets utilizing network, text, and news features.

Agricultural change calculation| Python
- Calculated the agricultural trend and measured the impact of urban development and climate change on the rural land of Idaho.

Research Publications

[1] Sakib, M. N. and Spezzano, F. "Credibility Drift Attacks: LLM Crafted Adversarial Manipulations That Flip News Believability." – Submitted to the ACM International Conference on Web Search and Data Mining (WSDM 2026).
[2] Sakib, M. N.; Duvall, A.; Young, S.; Mir, F. and Wang, Q. "A Data Driven Approach to Public Opinion Mining on Autonomous Vehicles: Sentiment Analysis of Social Media Comments Using Large Language Models." – *Transportation Research Board (TRB) 103rd Annual Meeting,* January 11–15, 2026, Washington, D.C., USA.
[3] Sakib, M. N.; Ahmed, M. S.; Spezzano, F. and Hamby, A. "Understanding News Consumers' Perceptions of Believability: A Study of Real and Fake News." – *Conference on Computer-Supported Cooperative Work & Social Computing (CSCW 2025).* https://dl.acm.org/doi/abs/10.1145/3757691
[4] Sakib, M. N.; Spezzano, F. and Hamby, A. "Opposites Attract? Ambivalence in Distinguishing Real and Fake News and Predicting their Spread." – *International AAAI Conference on Web and Social Media (ICWSM 2025).* https://ojs.aaai.org/index.php/ICWSM/article/view/35967
[5] Duran, J.; Sakib, M. N.; Eisty, N. U. and Spezzano, F. "Evaluating Code Metrics in GitHub Repositories Related to Fake News and Misinformation." - 2023 IEEE/ACIS 21st International Conference on Software Engineering Research, Management and Applications (SERA), https://ieeexplore.ieee.org/abstract/document/10197739
[6] Sakib, M. N. and Spezzano, F. "Automated Detection of Sockpuppet Accounts in Wikipedia." - ASONAM 2022 : IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, https://ieeexplore.ieee.org/abstract/document/10068604
[7] Allen, G.; Peterson, B. L.; Ratakonda, D. K.; Sakib, M. N.; Fails, J. A.; Kennington, C.; Wright, K. L. and Pera; M. S. "Engage!: Co-designing Search Engine Result Pages to Foster Interactions." - Interaction Design and Children Conference – (IDC 2021), https://dl.acm.org/doi/abs/10.1145/3459990.3465183