

Sarder Junaid Ahmed

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Research Interests

Probability theory, combinatorics, Bayesian statistics, statistical computing, causal inference, and robust machine learning; applications in political data science, predictive modeling, and algorithmic statistical testing.

Publications

2025: Ahmed, S.J. “Automated Statistical Pipeline for Large-Scale Governance Analysis: A Systematic Framework with Adaptive Test Selection and Multiple Comparisons Control.” Submitted for peer review.

2025: Ahmed, S.J. & Kwoshik, M.H.R. “Machine Learning Analysis of Political Regime Classification: A Comparative Study.” Submitted for peer review.

Research Experience

Rajshahi University of Engineering and Technology

Rajshahi, Bangladesh

Undergraduate Research Assistant (Independent)

2021–Present

- Conducted independent research on algorithmic statistical testing and probabilistic modeling for political regime classification.
- Developed ensemble machine learning models achieving 94.27% accuracy in government type classification, with theoretical evaluation of feature importance.
- Applied advanced statistical tests (Mann-Whitney U, Kolmogorov-Smirnov, Shapiro-Wilk) on 15,000+ observations to validate assumptions.
- Preparing two first-author manuscripts emphasizing algorithmic and statistical rigor.
- Collaborated with graduate student M.H.R. Kwoshik on comparative ML analysis with theoretical insights.

Research Projects

Human Development Index Prediction Using Machine Learning (2025):

- Technologies: Python, TensorFlow, Flask
- Achieved 85% accuracy, 15% improvement over baseline
- End-to-end deep learning pipeline with statistical validation for HDI forecasting
- **Available on GitHub:** Living-standard Repository

Ensemble Methods for Government Classification (2025):

- Methods: Random Forest, Lasso Logistic Regression ensemble
- Accuracy: 84%, 12% improvement over traditional methods
- Advanced feature selection and cross-validation with statistical significance testing
- **Available on GitHub:** Government Classification Repository

COVID-19 Vaccine Distribution (2025):

- Predictive analytics framework for optimal vaccine allocation using statistical modeling
- 20% improvement in distribution efficiency
- Multi-source data integration with theoretical and practical validation
- **Available on GitHub:** Vaccine Distribution Repository

Technical Skills

Programming:	Python, C/C++, SQL
Mathematical & Statistical Modeling:	Probability Theory, Combinatorics, Bayesian Inference, Hypothesis Testing, Regression Analysis, Advanced Statistical Tests (Mann-Whitney U, Kolmogorov-Smirnov)
Machine Learning:	TensorFlow, Scikit-learn, XGBoost, Pandas, NumPy
Deep Learning:	CNN, RNN, Model Optimization
Tools:	Jupyter, PyCharm, Google Colab, Flask, Git/GitHub, Linux
Visualization:	Matplotlib, Seaborn

Education

Rajshahi University of Engineering and Technology	Rajshahi, Bangladesh
<i>B.Sc. in Computer Science and Engineering, CGPA: 3.08/4.00</i>	<i>Graduated: Feb 2025</i>
Relevant coursework: Machine Learning, Deep Learning, Statistical Learning Theory, Probability and Combinatorics, Advanced Statistics, Data Structures & Algorithms, Database Systems, Numerical Methods.	

Teaching Experience

Independent Practice	Dhaka, Bangladesh
<i>Private Tutor</i>	<i>2019–Present</i>
Taught Python, Statistics, Probability, Calculus, and ML fundamentals with a focus on problem-solving and mathematical reasoning.	

Honors and Awards

- 2025:** First-author manuscripts under review in competitive journals
- 2024–2025:**Independent computational social science research recognition

Professional Activities

- 2023–Present:** Open Source Contributor: Active ML and statistical modeling projects on GitHub
- 2024–Present:** Continuous Professional Development: Self-directed advanced studies in probability, combinatorics, and statistical computing

References

Name:	Dr. Md. Nahiduzzaman
Position:	Assistant Professor, Dept. of Electrical & Computer Engineering
Institution:	Rajshahi University of Engineering and Technology
Email:	nahiduzzaman@ece.ruet.ac.bd
Phone:	+880-176-359-1843
Expertise:	Deep Learning, Medical Image Analysis, Machine Learning