Rajan Das Gupta

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RESEARCH PROFILE

I am a computer science researcher developing trustworthy, explainable, and multimodal machine learning systems for clinical decision support. My work focuses on retrieval-augmented healthcare AI, interpretable disease prediction, robust model evaluation, and multimodal reasoning for real-world medical and human-centered applications.

RESEARCH INTERESTS

My proposed doctoral research aims to develop reliable and interpretable AI systems for clinical decision support, with emphasis on multimodal learning, retrieval-augmented reasoning, explainable prediction, and robust evaluation in resource-constrained healthcare settings.

EDUCATION

Jahangirnagar University 2022–2023
M.Sc. in Computer Science *Bangladesh*
CGPA: 3.45/4.00
Thesis: *BRAINS: A Retrieval-Augmented System for Alzheimer's Detection and Monitoring.*

American International University-Bangladesh 2018–2021
B.Sc. in Computer Science and Engineering *Bangladesh*
CGPA: 3.44/4.00
Thesis: *Multimodal Programming in Computer Science with Interactive Assistance Powered by Large Language Model.*

RESEARCH EXPERIENCE

ElITE Research Lab LLC Oct. 2024–Present
Research Associate *New York, USA / Remote*

- Designed and evaluated retrieval-augmented multimodal systems for clinical decision support.
- Developed interpretable machine learning models robust to distribution shift in healthcare settings.
- Led end-to-end research workflows, including problem formulation, modeling, evaluation, writing, and revision.
- Contributed to projects involving clinical AI, multimodal reasoning, and explainable decision support.

American International University-Bangladesh Oct. 2023–Sept. 2024
Researcher *Dhaka, Bangladesh*

- Built interpretable machine learning models for clinical prediction tasks.
- Conducted full research lifecycle activities, from literature review and data preparation to evaluation and publication.
- Collaborated on research in healthcare AI, explainability, and applied machine learning.

TEACHING EXPERIENCE

PLAYPEN Education Aug 2023–Sept 2024
Lecturer *Bangladesh*

- Teach machine learning, data structures, programming, and applied computer science topics.
- Mentor students on algorithmic thinking, programming fundamentals, and machine learning projects.

INDUSTRY EXPERIENCE

APEX DMIT Ltd. Oct. 2024–Present
Product Manager *Bangladesh*

- Translate machine learning research into deployable AI systems and product specifications.
- Define system architecture, product requirements, and implementation priorities for AI-enabled applications.
- Coordinate between research, engineering, and product teams for AI system development.

Olivine Limited Oct. 2021–July 2023
Project Coordinator and UX Lead *Bangladesh*

- Managed software development lifecycles across product planning, design, implementation, and delivery.
- Conducted UX-driven product design, stakeholder coordination, and usability-focused feature planning.

PUBLICATIONS SUMMARY

Publications	First Author	Ranked Venues	Citations	h-index
18 (17 conf., 1 journal)	6	CORE A: 1, B: 1, C: 2	55+	6

Metrics from Google Scholar, September 2026.

- First-author contributions include retrieval-augmented clinical AI, cardiovascular diagnosis, liver cirrhosis staging, multimodal programming, HCI, and human behavior understanding.
- Research outputs span healthcare AI, vision–language modeling, low-resource language technologies, trustworthy AI, forecasting, and sustainable energy applications.

SELECTED PUBLICATIONS

1. M. T. Hosain, **R. D. Gupta,** Z. F. Tripty, and M. K. Morol. **REASOH: A Multi-Level Multi-Faceted Hindi Numerical Evaluation Suite for Foundation Models.** *In Findings of the Association for Computational Linguistics:* ***EMNLP 2026****. (CORE A*)*

2. **R. D. Gupta**, M. K. Morol, N. Fahad, M. T. Hosain, S. B. Z. Choya, and M. J. Hossen. **BRAINS: A Retrieval-Augmented System for Alzheimer's Detection and Monitoring**. In *24th International Conference on Machine Learning and Applications (ICMLA)*, 2025. *First author.*

3. **R. D. Gupta**, X. Wu, X. Liu, and J. He. **HyCARD-Net: A Synergistic Hybrid Intelligence Framework for Cardiovascular Disease Diagnosis**. In *2025 4th International*

Conference on Image Processing, Computer Vision and Machine Learning, 2025. *First author.*

4. **R. D. Gupta**, X. Wu, X. Liu, and J. He. **Locally Interpretable Surrogate-Guided Neural Framework for Multi-Class Liver Cirrhosis Staging**. In *Proceedings of the 2025 4th International Conference on Health Big Data and Intelligent Healthcare*, 2025. *First author.*

5. M. Raihan, P. K. Saha, **R. D. Gupta**, A. Z. M. Kabir, A. A. Tamanna, et al. **A Deep Learning and Machine Learning Approach to Predict Neonatal Death in the Context of Sao Paulo**. *International Journal of Public Health Science (IJPHS)*, 2025.

6. R. H. Sajib, M. K. Morol, **R. D. Gupta**, M. S. Mahmood, and S. S. Das. **VLAgeBench: Benchmarking Large Vision-Language Models for Zero-Shot Human Age Estimation**. In *28th International Conference on Computer and Information Technology (ICCIT)*, 2026.

GRANTS, FUNDS, AND RESEARCH SUPPORT

- USD 800 research grant for work on interpretable clinical artificial intelligence and explainable disease prediction, Multimedia University, 2025.
- USD 400 research fund for work on retrieval-augmented generation and clinical decision-support systems, Independent Researcher, 2025.
- USD 550 research grant for work on LLM-powered multimodal programming and computer science education, HCII, 2025.
- USD 600 research support for work on retrieval-augmented Alzheimer's detection and monitoring, ICMLA, 2025.

SELECTED RESEARCH PROJECTS

- **BRAINS**: Retrieval-augmented multimodal framework for Alzheimer's disease detection and interpretable clinical decision support.
- **HyCARD-Net**: Hybrid intelligence framework for cardiovascular disease diagnosis using neural and interpretable components.

AWARDS AND HONORS

- **Hult Prize Champion**, AIUB 2020.
- **Innobotics 1st Runner-Up**, UIU 2019.
- **BAIUST Robo Fest 1st Runner-Up**, BAIUST 2019.

ACADEMIC SERVICE

- **Peer Reviewer**: PLOS ONE, IEEE SMC, ICTAI, ICONIP, IEEE EDUCON.
- **Judge**: Three Minute Thesis Competition, 2025.

TEACHING AND MENTORING ACTIVITIES

- Lecturer for machine learning, data structures, and programming.
- Mentored students on programming, machine learning foundations, and applied AI projects.
- Supported student learning through project-based instruction and technical guidance.

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Java, R.
Machine Learning and AI: PyTorch, TensorFlow, Transformers, Hugging Face, Scikit-learn, CUDA.
Data and Experimentation: Pandas, NumPy, model evaluation, reproducible experimentation, dataset construction, annotation pipelines.
Research Tools: LaTeX, GitHub, scientific writing, literature review, manuscript preparation.
Domains: Healthcare AI, medical imaging, clinical prediction, natural language processing, multimodal learning, fairness, explainability.

REFERENCES

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