Shakib Al Hasan

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Profile

Shakib Al Hasan is a graduate with a Bachelor of Science (BSc) in Biomedical Engineering and an aspiring AI/ML Engineer with a strong foundation in machine learning, computer vision, and deep learning. He has gained hands-on experience with neural networks and model development for healthcare applications.

With deep expertise in SOTA AI models, including CNNs, Vision Transformers (ViTs), Large Language Models (LLMs), and Generative Adversarial Networks (GANs), he has contributed to several impactful publications in peer-reviewed journals. His research spans critical areas including brain tumor segmentation, cervical cancer prediction, Alzheimer's disease detection, and atrial fibrillation detection, demonstrating proficiency in innovative methodologies for medical diagnostics.

His technical proficiency encompasses programming languages (C++, Python, MATLAB), AI/ML frameworks (TensorFlow, PyTorch, Hugging Face), and specializations in deep learning, computer vision, and LLMs. He also gained practical experience in EEG and CT scan imaging during his internship.

A passionate advocate for the integration of AI in healthcare, Shakib aims to leverage cutting-edge technologies for personalized diagnostics and treatment optimization through multimodal AI solutions, positioning him to make significant contributions to the advancement of biomedical technology.

Research Interests

Multimodal Generative AI and LLMs for personalized healthcare and diagnostics.

Machine Learning for advanced diagnostics and treatment optimization.

Development of Foundation Models for scalable AI solutions and automation.

Education

Islamic University (IU), Kushtia-7003, Bangladesh
Bachelor of Science (B.Sc.) in Biomedical Engineering (BME)
CGPA: 3.47/4.00 (3.77 in last semester) *January 2020 – August 2025*

Publications

DSIT-UNet: A Dual-Stream Iterative Transformer Based UNet Architecture for Segmenting Brain Tumors from FLAIR MRI Images
Authors: Shakib Al Hasan, SM Mahim, Md Emamul Hossen, Md Olid Hasan, Md Khairul Islam, Peiman Parand, Salahuddin Khan, Mohammad Alibakhshikenari, Md Sipon Miah
Journal: Scientific Reports
Status: Accepted

DSP-UNet: Dual-Skip Perceiver UNet for Lower-Grade Glioma Segmentation
Authors: Shakib Al Hasan, SM Mahim, Md Emamul Hossen, Md Olid Hasan, Tanjim Hasan Ashik, Faisal Ahmmed, Md Khairul Islam, Md Sipon Miah
Coference: 2024 27th International Conference on Computer and Information Technology (ICCIT)
Status: Accepted

Boosting Cervical Cancer Prediction Leveraging a Hybrid FT-Transformer Model
Authors: Md Emamul Hossen, SM Mahim, Shakib Al Hasan, Md Khairul Islam, Md Shohidul Islam, Salahuddin Khan, Mohammad Alibakhshikenari, Md Sipon Miah
Journal: IEEE Access
Status: Accepted

Fusion of Vision Transformers and Fourier Transform Networks to Capture Spatial Frequency Patterns in Chest Computed Tomography Scans for Lung Disease Diagnosis
Authors: Md Emamul Hossen, SM Mahim, Shakib Al Hasan, Md Olid Hasan, Md Khairul Islam, Md Sipon Miah

Journal: Scientific Review
Status: Under review

AFNet-MI: Motor Imagery EEG Signal Classification for Hand Movements Using Attention-Integrated FNet Blocks
Authors: SM Mahim, Md Emamul Hossen, Shakib Al Hasan, Shekh Naziullah, Md Khairul Islam, Kazi Mowdud Ahmed, Md Sipon Miah
Conference: 2024 2nd International Conference on Machine Intelligence and Emerging Technologies (MIET)
Status: Accepted

TransMixer-AF: Advanced Real-Time Detection of Atrial Fibrillation Utilizing Single-Lead Electrocardiogram Signals
Authors: SM Mahim, Md Emamul Hossen, Shakib Al Hasan, Md Khairul Islam, Zafar Iqbal, Mohammad Alibakhshikenari, Mario Collotta, Md Sipon Miah
Journal: IEEE Access
Status: Accepted

Unlocking the Potential of XAI for Improved Alzheimer's Disease Detection and Classification Using a ViT-GRU Model
Authors: SM Mahim, Md Shahin Ali, Md Olid Hasan, Abdullah Al Nomaan Nafi, Arefin Sadat, Shakib Al Hasan, Bryar Shareef, Md Manjurul Ahsan, Md Khairul Islam, Md Sipon Miah, and Ming-Bo Niu
Journal: IEEE Access
Status: Accepted

Efficient and Lightweight Multi-Level Token Mixing and Attention-Based Architecture for Breast Cancer Detection in Multi-Resolution Histopathological Images
Authors: Md Emamul Hossen, SM Mahim, Md Olid Hasan, Shakib Al Hasan, Faysal Ahmmed, Md Khairul Islam, Mahmoud Abdelwahab, Mohammad Alibakhshikenari, Sakfarinas Saber, Md Sipon Miah
Journal: IEEE Access
Status: Under Review

Projects

Magnification-Invariant Histology Image Classification (Ongoing)
Description:

- Developed a deep learning model capable of classifying histology images across various magnifications, addressing a significant challenge in magnification-dependent models.

Key Achievements:

- Outperforms state-of-the-art models in accuracy and robustness without preprocessing or data balancing, even with imbalanced datasets, and achieves magnification invariance for broader medical image analysis applications.
- Designed to handle multimodal data, demonstrating its scalability and versatility for a wide range of use cases.

Professional Experience

Intern
Amin Diagnostic Ltd., Kushtia-7003, Bangladesh.
Gained practical experience through a one-week fieldwork program that provided real-world exposure to EEG and CT scan imaging techniques. This internship was part of the fieldwork requirement for the B.Sc. (Eng.) in Biomedical Engineering.

Technical Skills

Programming and Development: C++, Python, MATLAB
AI and Machine Learning:

Frameworks and Libraries: TensorFlow, PyTorch, NumPy, scikit-learn, Hugging Face
Specializations: Deep Learning, Machine Learning, Computer Vision, Natural Language Processing
Technologies and Tools: LLMs (Hugging Face, LLaMA)
Writing and Presentation: LaTeX, PowerPoint, Microsoft Word, Excel

Awards and Achievements

Top Five in Precise Energy Olympiad 2020
A two-stage Olympiad in Physics, Chemistry, and Mathematics, organized by the Information Center on Nuclear Energy (ICONE), Dhaka.
Website: bdnuclear.energy

Biology Olympiad 2019 (Division Runner-Up)
Secured First Runner-Up in the divisional round. Organized by the Bangladesh Biology Olympiad.
Website: bdbo.org

Aspire Leaders Bangladeshi alumni community
Aspire Leader for the global leadership program empowering **first-generation** university students and recent graduates, initiated by Harvard University in 2017 and now run by the Aspire Institute.
Website: aspireleaders.org

References

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Professor, Dept. of Information and Communication Technology, IU
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