

Fuad Al Abir

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EDUCATION

Rajshahi University of Engineering & Technology

B.Sc. in Computer Science & Engineering

CGPA: 3.59/4.00 (First Class 9th in a class of 114)

Thesis: Cancer Biomarker Identification using Autoencoder Embeddings

Rajshahi, Bangladesh

October 2022

PROFESSIONAL EXPERIENCES

MyMedicalHUB International, Ltd.

Senior AI Developer

- Leading the development of *Intelligent Gait and Balance System* with 4 Junior AI Developers.
- Collaborating with the *MMH Clinical Team* consisting of physicians and physical therapists.
- Maintaining Agile software development methodology for product development and deployment.
- Written patents and documentation regarding ROM and Gait projects.
- Recruited 7 Junior AI Developers by conducting a full recruitment cycle - from coding challenge to interview.

Dhaka, Bangladesh

November 2022 – Present

Junior AI Developer

September 2022 - October 2022

- Initiated a new project: *Intelligent Gait and Balance System*.
- Proposed a solid ML-based gait abnormality detection framework - from dataset creation protocol to deployment.

AI Research Assistant

June 2020 – August 2022

- Measured Range of Motion (ROM) from patient videos using state-of-the-art human pose estimation models.
- Managed multiple Amazon Elastic Compute Cloud (EC2) and Amazon Simple Storage Service (S3).
- Developed a novel technique for measuring the trunk rotation ROM based on 3D pose estimation.
- Prepared datasets for ROM exercise specific custom-trained models.
- Built a distributed system to up-scale ROM API requests following master-slave architecture.

Jaliks Soft

Software Quality Assurance Trainee

- Performed alpha-testing on different web applications.
- Created automated test plan.
- Prepared test reports and project documentations.

Khulna, Bangladesh

August 2017 – November 2017

RESEARCH EXPERIENCES

Machine Learning Research Group

Research Assistant

- Published 4 refereed journal articles and 1 refereed conference paper.
- Conducted study group(s) with 10⁺ undergrads focusing on current research trends in AI/CS.
- Initiated Computer Science Research Archive, RUET (csra-ruet.github.io).

Rajshahi, Bangladesh

August 2019 – October 2022

Lab Head: Prof. Dr. Md. Al Mehedi Hasan

PUBLICATIONS

1. **Fuad Al Abir**, S M Shovan, Md. Al Mehedi Hasan, Abu Sayeed & Jungpil Shin, *Biomarker identification by reversing the learning mechanism of an autoencoder and recursive feature elimination*. Published in **Molecular Omics**, Royal Society of Chemistry (May 2022).
2. **Fuad Al Abir***, Md. Al Mehedi Hasan*, Md. Al Siam & Jungpil Shin. *Gait recognition with wearable sensors using modified residual block-based lightweight CNN*. Published in **IEEE Access**, IEEE (April 2022) (* denotes equal contribution).

3. **Fuad Al Abir**, Md. Al Siam, Abu Sayeed, Md. Al Mehedi Hasan & Jungpil Shin. *Deep Learning Based Air-Writing Recognition with the Choice of Proper Interpolation Technique*. **Sensors**, MDPI (December 2021).
4. Utshab Kumar Ghosh, **Fuad Al Abir**, Nahian Rifaat, S M Shovan, Abu Sayeed & Md. Al Mehedi Hasan. *Most dominant metabolomic biomarkers identification for lung cancer*. Published in **Informatics in Medicine Unlocked**, Elsevier (December 2021).
5. Md. Al Mehedi Hasan, **Fuad Al Abir** & Jungpil Shin. *Surface Type Classification for Autonomous Robots Using Temporal, Statistical and Spectral Feature Extraction and Selection*. In Proceedings of the **14th IEEE International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoc)** (20-23 December 2021).

CURATED DATASETS

Prothom Alo: The largest dataset for categorized Bengali news [articles](#) & [comments](#) from 2013 to 2019.

Cancer Biomarker Identification: A [repository](#) for pan-cancer, metastasis and CTC gene-expressions.

SELECTED PROJECTS

Explainable CNNs in Medical Imaging CSE 3200

- Focused on *building trust* in modern AI systems in medicine. *May 2020*
- Trained and evaluated various state-of-the-art vision models on microscopic NIH Malaria dataset.
- Developed a Grad-CAM alike framework from scratch aggregating propagation heatmaps.

Supervisor: Prof. Dr. Md. Al Mehedi Hasan

Notebook Link: [Classification](#) & [Explainability](#)

Islamic Geometric Patterns with Catmull-Rom Splines CSE 3112

- Explored the realm of interactive computing and generative art. *April 2019*
- Developed interactive software for generating IGP with straight lines and curves using p5.js.
- Written a paper and presented it following IEEE conference guidelines.

Course Instructor: Prof. Dr. AHM Sarowar Sattar and Biprodip Pal

Link: [Paper](#) & [Presentation](#)

AWARDS

VC's List at Rajshahi University of Engineering & Technology for obtaining an SGPA of 3.75 or above in 2019–20.

Merit Scholarship by Bangladesh Technical Education Board for the 2016–17, 2017–18 and 2019–20 sessions.

Merit Scholarship by the Board of Intermediate and Secondary Education, Jashore from 2011 to 2013.

Merit Scholarship by the Directorate of Primary Education, Govt. of Bangladesh from 2008 to 2010.

OTHER EXPERIENCES

Roar Bangladesh Ltd.

Feature Writer

Remote

April 2017 – November 2018

- Wrote 29 full-length features on film, art, literature, folklore, philosophy, and tech.
- *Best Writer of the Month* for March 2018.

Link: [Author Page](#)

TECHNICAL SKILLS

- **Operating Systems:** Ubuntu, Windows
- **General Purpose:** Python, C++, Java
- **IDE:** VS Code, Google Colab, Jupyter Notebook
- **Version Control/DevOps:** Git, MS Azure
- **Web:** Django, Bootstrap, Tailwind, Beautiful Soup
- **Technical Writing:** L^AT_EX, Overleaf
- **Documentation:** Sphinx
- **Exploratory Data Analysis:** Numpy, Pandas, Matplotlib, Seaborn
- **Machine Learning / Deep Learning Libraries:** Scikit-learn, Keras, TensorFlow, tf.js, PyTorch
- **Cloud:** EC2, S3 from AWS
- **Familiar with:** Android Application Development (Java), Network Programming (Java), MySQL, NoSQL, Assembly (x86), HDL, Generative Art Programming (Processing, p5.js)