Md Salman Shamil

Lecturer, Dept. of ECE, North South University, Dhaka.

s-shamil.github.io
salman.shamil@northsouth.edu

EDUCATION

School of Computing, National University of Singapore — Singapore
Master of Science (Research), Dept. of Computer Science — *August 2022-January 2025*
CGPA: 4.79/5.00
Thesis: *On the Utility of 3D Hand Poses for Action Recognition.*
Advisor: Dr. Angela Yao

Bangladesh University of Engineering and Technology — Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering — *February 2016-February 2021*
CGPA: 3.81/4.00 (Major CGPA: 3.95/4.00)
Thesis: *Revisiting Segmentation of Lung Tumor from CT Images.*
Advisor: Dr. M Sohel Rahman

PROFESSIONAL EXPERIENCE

Lecturer — *September 2025 – Present*
Department of Electrical and Computer Engineering
North South University (NSU), Dhaka, Bangladesh

Lecturer — *February 2021 – August 2022, February 2025 – September 2025*
Department of Computer Science & Engineering
United International University (UIU), Dhaka, Bangladesh

Teaching Assistant — *August 2022 – December 2024*
School of Computing
National University of Singapore, Singapore

RESEARCH INTEREST

Deep Learning, Computer Vision, Video Understanding, AI for Healthcare

PUBLICATIONS

1. **Shamil, M.S.**, Chatterjee, D., Sener, F., Ma, S. and Yao, A., 2024, September. On the utility of 3d hand poses for action recognition. In *European Conference on Computer Vision* (pp. 436-454). Cham: Springer Nature Switzerland.
2. Farheen, F., **Shamil, M.S.**, Ibtehaz, N. and Rahman, M.S., 2022. Revisiting segmentation of lung tumors from CT images. *Computers in Biology and Medicine*, p.105385. *[Co-first author]*
3. **Shamil, M.S.**, Farheen, F., Ibtehaz, N., Khan, I.M. and Rahman, M.S., 2021. An Agent-Based Modeling of COVID-19: Validation, Analysis, and Recommendations. *Cognitive Computation*, pp.1-12.

POSTERS & PREPRINTS

1. **Shamil, M.S.**, Chatterjee, D., Sener, F., Ma, S. and Yao, A., 2024, September. HandFormer: Utilizing 3D Hand Pose for Egocentric Action Recognition. *First Joint Egocentric Vision (EgoVis) Workshop @ CVPR 2024, Seattle, USA*. [Extended Abstract & Poster]
2. Farheen, F., **Shamil, M.S.**, Rahman Jony, S.S., Ahmad, Z., Sojib, K.H., Chowdhury, A., Niaz Arifin, S.M., Sania, A. and Rahman, M.S., 2022. An Agent-Based Model for COVID-19 in Bangladesh. *medRxiv, pp.2022-07. [Co-first author]* [Preprint]

3. Habib, M., **Shamil, M.S.** and Rahman, M.S., 2021. Counting and Verifying Abelian Border Arrays of Binary Words. *arXiv preprint arXiv:2111.00259*. [Preprint]

SELECTED RESEARCH PROJECTS

- **On the Utility of 3D Hand Poses for Action Recognition**, as part of M.Sc. thesis, *December 2022-December 2024*. Worked with Assoc. Prof. Dr. Angela Yao and Dr. Fadime Sener.
  - Developed HandFormer, a novel multimodal transformer, to efficiently recognize hand actions.
  - Proposed a factorized pose representation that can combine 3D hand poses with sparsely sampled RGB frames for high accuracy and efficiency.
  - Achieved new state-of-the-art performance on Assembly101 and H2O datasets, showcasing the utility of 3D hand poses for egocentric and multi-view action recognition.
- **True Random Number Generation as a Byproduct of DNA Storage Operation**, *August 2022-December 2022*. Worked with Asst. Prof. Dr. Djordje Jevdjic.
  - Proposed a method leveraging DNA sequencing to generate a free source of true random numbers, minimizing bias and achieving NIST compliance.
  - Developed and experimentally validated a practical approach for constructing truly random bit streams based on the order of DNA molecules during the readout process.
- **Segmentation of Lung Tumor from CT Images using Deep Learning**, as part of B.Sc. thesis. *September 2019-February 2021*. Worked with Prof. Dr. M. Sohel Rahman.
  - Worked on Lung-Originated Tumor Segmentation from Computed Tomography Scan (LOTUS) Benchmark dataset.
  - Proposed a unique preprocessing technique by combining neighboring CT slices for context and wavelet transforms for texture analysis.
  - Experimented with several deep learning models and incorporated deep supervision in MultiResUNet for achieving the best results.
- **Agent-based Modeling of COVID-19**, *May 2020-May 2022*. Worked with Prof. Dr. M. Sohel Rahman.
  - Implemented and validated an Agent Based Model (ABM) with individual action details.
  - Examined the impacts of different interventions and the effectiveness of digital herd immunity.
  - Developed forecasting models and data-driven responses for public health challenges with Aspire to Innovate (a2i), under the ICT and Cabinet Divisions of the Government of Bangladesh.

TEACHING EXPERIENCE

- **National University of Singapore (NUS)**
  Performed TA duties by conducting tutorials, grading assignments, and mentoring students.
  - **CS4243: Computer Vision and Pattern Recognition** by *Prof. Angela Yao*
    Designed and graded assignments and sessionals; also provided logistical support.
  - **BT3017: Feature Engineering for ML** by *Prof. Ng Teck Khim*
    Conducted tutorial classes, evaluated assignments and provided consultation hours.
- **United International University (UIU)**
  Conducted undergraduate teaching, curriculum planning, and advising as a full-time lecturer.
  - **Core Computer Science:** Operating Systems, Databases, Theory of Computation

- **Digital & Circuit Design:** Digital Logic Design, Digital System Design, Electrical Circuits
- **Advanced Topics in Computing:** Simulation & Modeling, Introduction to Bioinformatics

ACADEMIC SERVICES

- Served as a peer reviewer for top-tier computer vision conferences.
  - **CVPR** (2025), **ECCV** (2024), **BMVC** (2024, 2025), **CVPR Workshops** (2024, 2025)
- Academic team member, Bangladesh Physics Olympiad (BdPhO) 2018.
- Co-founder and trainer (2015-2016), Paradox Physics School, Chittagong.

TECHNICAL SKILLS

Programming Languages: Python, C, C++, Java, C#, MATLAB, bash

Deep Learning Frameworks: PyTorch, TensorFlow, Keras

Data Science Libraries: NumPy, Pandas, SciKit-Learn, Matplotlib, Seaborn

Markup Languages: HTML, LaTeX **DBMS:** Oracle, MySQL

Others: Git, Django, OpenGL, Assembly (8086), Flex, Bison

AWARDS AND PRIZES

- NUS SoC Research Incentive Award (October 2023)
- NUS Research Scholarship (August 2022-December 2024)
- BUET Undergraduate University Merit Scholarship (2020)
- BUET Undergraduate Dean's List Scholarship (2020)
- First Runner-up, Math Olympiad (University Level), BUET Math Festival 2018
- First Runner-up, Puzzle Olympiad, BUET Math Festival 2018
- Champion, Puzzle and Logic Contest, BUET CSE DAY 2016
- Education board scholarships in SSC and HSC
- 5th place in National Round, 5th Bangladesh Physics Olympiad (BdPhO 2015)
- Second runner-up in National Round, 9th Bangladesh Mathematical Olympiad (BdMO 2011)

REFERENCE

Associate Professor Angela Yao, Dean's Chair Associate Professor, School of Computing, National University of Singapore (ayao@comp.nus.edu.sg)

Professor M. Sohel Rahman, Professor, Department of CSE, BUET, ECE Building, West Palasi, Dhaka-1205, Bangladesh (msrahman@cse.buet.ac.bd)

Dr. Fadime Sener, Research Scientist, Meta Reality Labs, Zurich, Switzerland (sener@cs.uni-bonn.de)