Md Salman Shamil

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EDUCATION

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)

Chittagong College — Chittagong, Bangladesh
Higher Secondary School Certificate (HSC) — *2013-2015*
GPA: 5.00/5.00

Bangladesh Navy School and College — Chittagong, Bangladesh
Secondary School Certificate (SSC) — *2003-2013*
GPA: 5.00/5.00

PROFESSIONAL EXPERIENCE

Lecturer at Department of Computer Science & Engineering — *February 2021-Present*
United International University (UIU) — Dhaka, Bangladesh

RESEARCH INTEREST

Machine Learning, Computer Vision, Agent-Based Modeling, Bioinformatics, Algorithms, Stringology

PUBLICATIONS

1. **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.

RESEARCH EXPERIENCE

- **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.
- **Counting and Verifying Abelian Border Arrays of Binary Words**, *September 2019-Present.* Worked with Prof. Dr. M. Sohel Rahman.
  - Showed that the number of valid abelian border arrays of length n is 2^{n-1}.
  - Reduced the abelian border array verification problem to computing the abelian border array of a particular binary word to propose an $O\left(\frac{n^2}{\log^2 n}\right)$ time algorithm.

- **Agent Based Modeling of COVID-19**, *May 2020-Present.* 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.
  - Worked on a scalable ABM for the districts of Bangladesh using contact matrix in collaboration with *a2i* and *icddr,b*.

SELECTED CLASS PROJECTS

- **CRISPR/Cas9 on-target knockout efficacy prediction:** A project under Machine Learning Sessional course using traditional machine learning with sequence-based properties and deep learning techniques.
- **ML-based Credit Risk Prediction:** An application for commercial banks to use machine learning for credit risk prediction.
- **Buy, Sell and Donate Books:** An application to manage collection and distribution of books among the users of the system using Java and PL/SQL.
- **Internet Download Manager:** A simple application written in Java to manage multiple downloads simultaneously and to keep track of unfinished downloads for resuming later.
- **My C Compiler:** A compiler written using Flex and Bison for a subset of C language as part of coursework.
- **DoS Attack to DNS Server Using Spoofed IP address:** A project as part of Computer Security coursework - using C++, Python as programming languages and setting up "Simple DNS Plus" as the DNS server.
- **Connect Four:** A simple two player fun game using C++ iGraphics (a wrapper for OpenGL in 2D).

TECHNICAL SKILLS

- **Programming Languages:**
  C, C++, Python, Java, C#, MATLAB, bash
- **Markup Languages:**
  HTML, LaTeX
- **Data Science Libraries:**
  NumPy, Pandas, Keras, SciKit-Learn, Matplotlib, Seaborn
- **Database Management System:**
  Oracle, MySQL
- **Environment:**
  PyCharm, NetBeans, Visual Studio Code, CodeBlocks, Jupyter Notebook
- **Others:**
  Git, Django, OpenGL, Assembly (8086), Flex, Bison, MS Office.

COMPETITIVE PROGRAMMING

- **CODEFORCES** (*Highest Rating: 1721*) https://codeforces.com/profile/Slmnshamil
- **CODECHEF** (*Highest Rating: 1658*) https://www.codechef.com/users/slmnshamil3012
- **LightOJ** (*Solved 110+ Problems*) https://lightoj.com/user/msshamil-xcp26

TEACHING EXPERIENCE: COURSES INSTRUCTED

- CSE 2233: Theory of Computation (Summer 2021)

- CSI 423: Simulation & Modeling (Summer 2021)
- CSE 4510: Operating System Concepts Laboratory (Summer 2021)
- CSE 3522: Database Management Systems Laboratory (Summer 2021)
- CSI 424: Simulation & Modeling Laboratory (Summer 2021, Spring 2021)
- CSE 429: Digital System Design (Spring 2021)
- EEE 2113: Electrical Circuits (Spring 2021)

AWARDS AND PRIZES

- University Merit Scholarship
- Dean's List Scholarship
- 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)

OTHER ACTIVITIES

- External reviewer for *Combinatorial Algorithms*, 31st International Workshop, IWOCA 2020, Bordeaux, France, June 8–10, 2020, Proceedings.
- Academic team member, Bangladesh Physics Olympiad (BdPhO) 2018.
- Co-founder and trainer (2015-2016), Paradox Physics School, Chittagong. (A voluntary organization aimed at helping physics enthusiast school students to pursue physics olympiads)

REFERENCE

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