Shoumik Saha

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RESEARCH INTEREST

- **Security** - Computer security, Network security, Adversarial attack, Software security
- **Machine Learning** - Adversarial Machine Learning
- **Bioinformatics** - Biomedical, Human-computer Interaction

PROFESSIONAL EXPERIENCE

Lecturer
Department of Computer Science and Engineering — *Jul 2021 – Present*
United International University

Research Assistant
Data Science and Engineering Research Lab — *Mar 2021 – Present*
Bangladesh University of Engineering and Technology (BUET)

Under the supervision of
Dr. Mohammed Eunus Ali, Dr. Atif Hasan Rahman

EDUCATION

Bangladesh University of Engineering and Technology (BUET)
BSc. in Computer Science and Engineering — *Mar 2016 – Feb 2021*

- CGPA – *3.66/4.0*
- Advanced GPA – *3.79/4.0*
- Thesis supervisor – Dr. Atif Hasan Rahman

Notre Dame College
Higher Secondary Certificate — *Jul 2013 – Jun 2015*

- GPA – 5.00/5.00

RESEARCH

- **Shoumik Saha**, Sadia Afroz, Atif Rahman. **MALIGN: Adversarially Robust Malware Family Detection using Sequence Alignment** (BSc Thesis) (arXiv) (pdf)
  A novel approach that incorporated ideas and tools from Bioinformatics into Malware Security. We developed a static, robust, less-resource intensive and scalable classifier with better accuracy than most state-of-the-art models. Malign can give insight to defenders by relocating the code blocks responsible for malicious attacks.
  Status: Proceeded to the rebuttal period of IEEE S&P 2022 (acceptance rate: 14.9%)
- **Shoumik Saha**, Subangkar Karmaker, Atif Rahman, Mohammed Eunus, Mehedy Masud. **Detecting Atrial Fibrillation from PPG Signal using Similarity Based Unsupervised Learning**
  A Government-funded project detecting atrial fibrillation from noisy ppg signals. We are incorporating similarity based machine learning models into statistical method, and have developed an android app that can alert the user early in case of arrythmia attack.
  Status: Ongoing

SCHOLARSHIPS AND ACHIEVEMENTS

- Was awarded *'Innovation Fund'* for research from the ICT division of Bangladesh government
- Achieved *'Merit Stipends'* from BUET in five out of seven terms
- Got *'Dean's Award'* in Junior year for extra-ordinary result
- Achieved *'Talent-Pool Scholarship'* in High School
- Achieved *'Talent-Pool Scholarship'* and tuition fee waiver in Junior School

SELECTED ACADEMIC PROJECTS

- **Website Development for Flight and Hotel Room Reservation System** (Github link)
  Developed a website where customers can book flight tickets, hotel rooms through card payment, and companies can update their page and manage bookings.
  Tools: Django, SQLite
- **Software Development for Football Club Management** (Github link)
  This application stores all information about the club (players, managers, games). Admin of the club can update, add and delete these information and generate graphs from statistics.
  Tools: Java, JavaFX, Oracle Database
- **Micro-controller Project for Real-time Detection of Car Theft** (Youtube video link)
  Can detect a car in real time and send a warning message with gps location to the owner's mobile.
  Tools: Arduino, GPS, GSM module, Sonar, LDR sensor
- **Multi-player Shooting Game** (Github link)
  A 2^{nd} year project, two players can connect from two different machines under the same network.
  Tools: Java, JavaFX, Java Networking
- **Tic-Tac-Toe** (Github link)
  A 1^{st} year project, single player Tic-Tac-Toe game with Mini-Max algorithm.
  Tools: C, iGraphics, Artificial Intelligence
- **Miscellaneous**
  - Developing a C compiler using lexical analyzer and parser designing tools
  - Designing a 4-bit Computer Model using Atmel Studio, MIPS architecture
  - Simulating Mancala game in AI lab course
  - Implementing and modifying some functionalities of XV6 Operating System
  - Modifying some functionalities of Computer Network in NS2.

COURSES INSTRUCTED

- Discrete Mathematics
- Data Structure and Algorithm
- Operating Systems
- Digital Logic Design

ACTIVITIES

- General Secretary, BUET Photographic Society
- President, Notre Dame Nature Study Society
- Participant, ICPC Dhaka Regional
- Vice President, Gregorian Science Club

STANDARDIZED TEST SCORES

- *TOEFL:* 111/120 (Reading: 28, Listening: 28, Speaking: 27, Writing: 28)
- *GRE:* 321/340 (Quant: 167, Verbal: 154, AWA: 3.5)