# S M A Nahian

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## Education

**Massachusetts Institute of Technology** **August 2025 – Current**
*Bachelor of Science* *Massachusetts, USA*
*Relevant Courses:* Randomized Algorithms

## Achievements

**Mathematical Olympiads**: International Mathematical Olympiad Bronze Medal (2023, 2024) and Honorable Mention (2022); Asia Pacific Mathematics Olympiad Silver Medal (2022, 2023) and Bronze Medal (2024)

**Competitive Programming**: Asia Pacific Informatics Olympiad Finalist (2024); ICPC Asia Dhaka Regional 6th Position as a guest high school team (2023); Bangladesh Olympiad in Informatics Bronze Medal (2023, 2024); Master rank at CodeForces

**Chess**: Arena FIDE Master (AFM) at International Chess Federation - FIDE

## Skills

**Programming/Scripting Languages**: Python, C++, C, Rust, PHP, Java
**Technologies/Frameworks**: Linux, GitHub, Flask, Verus, MongoDB

## Experience

**Cybersecurity at MIT Sloan (CAMS)** **September 2025 – Current**
*Undergraduate Research Assistant* *Massachusetts, USA*
- Developing graph-based models to analyze and minimize risk propagation in AI supply chains.
- Designing optimization methods to identify the most critical components to harden, sign, or verify for maximum security impact.

**Beneficial AI Foundation** **September 2025 – Current**
*Undergraduate Research Assistant* *Massachusetts, USA*
- Contributing to Dalek-Lite, a Rust-based fork of dalek-cryptography/curve25519-dalek, aimed at the formal verification of elliptic-curve cryptography using Verus. GitHub: `Beneficial-AI-Foundation/dalek-lite`

**Gonitzoggo** **August 2023 – July 2025**
*Engineering Team Member* *Bangladesh*
- Identified a major security flaw and was recruited as a developer after reporting it.
- Built key features and redesigned contest UI and logic for version 3, improving usability.

## Research

**BLANT Project (Under Prof. Wayne Hayes, UCI)** **October 2023 – August 2025**
- Developed a method to estimate absolute graphlet counts from relative concentrations using star-motifs
- Derived normalization formulas for two existing sampling methods: NBE (Node-Based Expansion) and EBE (Edge-Based Expansion), making them usable in practice with reduced statistical noise
- Improved the $\alpha$-computation algorithm in MCMC sampling, reducing runtime from hours to seconds for k=8

## Projects

**Chess Analyzer** | *Python, Chess* **June 2025**
- Built a tool that analyzes a player's games to detect recurring opening mistakes and allows replaying those positions to practice and avoid repeating them

**CP Calendar** | *Python, Flask* **February 2022**
- Created a customizable online calendar stream to organize and filter competitive programming contests from a huge number of online judges, helping users track and plan participation, thus staying organized and efficient

## Extracurricular Activities

**Mentor and Academic Team Member** **2022 – Current**
*Bangladesh Mathematical Olympiad and Gonitkonya - Bangladesh Girls' Mathematics Foundation*

**Founder** **2024**
*NEMOP - Year Long Online Mathematics Training Program For Bangladeshi Students*