Partha Sarker

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Education

B.Sc. (Engg.) in Computer Science and Engineering   Sylhet, Bangladesh | **Feb 2017 – Jun 2021**
Shahjalal University of Science and Technology
- **CGPA: 3.76/4.0** (Ranked 10th out of 107 students)
- **Thesis**: A Notification-Based Nudge for Handling Excessive Smartphone Use.
- **Advisor**: Marium-E- Jannat

Test Scores

IELTS Academic: Overall 7.5 (Listening: 8.0, Reading: 8.0, Writing: 6.5, Speaking: 6.5)   **Jul 2025**
GRE General: Overall 309 (Quant: 162, Verbal: 147, Analytical Writing: 3.5)   **Apr 2025**

Research Interest

- **HCI**: Focusing on digital wellbeing and user-centered design to improve human-technology interaction.
- **AR/VR**: Developing immersive systems for education, accessibility, and medical applications.
- **Computer Vision**: Advancing visual recognition and image analysis techniques across diverse domains.

Research Experience

Thesis: A Notification-Based Nudge for Handling Excessive Smartphone Use. [arXiv]   **Jan 2020 – Jun 2021**
- Developed *App Usage Monitor*[GitHub], an **Android** app that reduces smartphone overuse using **notification-based nudges**, grounded in **Human-Computer Interaction (HCI)** principles. The app enhances user **self-awareness** without causing frustration or annoyance.
- **Reduced smartphone usage by over 6%** through a **three-week experiment**.

Lab Project: Handwritten Word Segmentation. [GitHub]   **Jan 2020 – Dec 2020**
- Implemented **word segmentation** from **handwritten documents** using **Python** and **OpenCV**.

Work Experience

Software Engineer I | MarginEdge | Remote   Arlington, Virginia, USA | **Aug 2024 – Present**
Project: MarginEdge Platform
Comprehensive restaurant management software integrating with 60+ POS systems for automated invoice processing, inventory management, and real-time P&L insights.
- **Systems Optimization**: Reduced data processing time by **97% (100min → 3min)**
- **Monitoring Infrastructure**: Created real-time AWS dashboards cutting incident triage by 60%
- **Data Integrity**: Developed migration validation system preventing data loss.
  - Spring Boot, Postgres, React, AngularJS, AWS (CloudWatch, DynamoDB, S3, EC2, Lambda, SQS)

Software Engineer | Dynamic Solution Innovators | Onsite   Dhaka, Bangladesh | **May 2021 – Jul 2024**
Project: IEIMS (Integrated Education Information Management System)   May 2021 - Dec 2023
National digital platform managing 20M+ student' educational operations for Bangladesh Ministry of Education.
- **Large-Scale Systems**: Developed national education platform serving **20M+ students**.
- **Performance Engineering**: Optimized database queries (**50s → 4s** response time).
- **Process Automation**: Created **QR attendance system** reducing manual work by 80%.
- **Distributed Systems**: Containerized microservices using Docker/Kubernetes.
  - Spring Boot, Kubernetes, Docker, Next.js, MS SQL Server, Jenkins

Project: CRVS (Civil Registration and Vital Statistics)   Jan 2024 - Jul 2024
National system for recording birth, death, marriage, divorce with automated digital ID creation for 10M+ entries.

- **Automation**: Automated digital ID creation for **10M+ records**.
- **System Optimization**: Optimized database queries (**50s → 4s** response time).
  - Laravel, Oracle Database

Awards & Recognition

Perfect Performance Review | MarginEdge — **2025**
- Rated *Exceeding Expectations* across all performance evaluation categories.

2nd Runner-up, National Hackathon | LICT SUST Techfest — **2019**
- Developed *ECHO* sign language interpreter to help disabled people communicate.

Merit Scholarship | Shahjalal University of Science and Technology — **2017 - 2021**
- Awarded for academic excellence (Top 10%).

Competitive Programming Achievement — **2017 - Present**
- Problem Solving (Basic) | HackerRank | Certificate
- Solved 500+ data structure, algorithmic problems on various online judges. LeetCode, StopStalk.

Machine Learning Foundations | Certificate — University of Washington | **Jun 2020**
- Covered case study approach to ML applications and algorithms.

Technical Projects

- **AR Girl (Augmented Reality)**: **AR** character controller for real-world navigation using **Unity**, **ARCore** and **C#**.
- **App Usage Monitor**: **Android** app tracking usage with **target notifications** to reduce smartphone overuse.
- **ECHO**: **Sign language interpreter** for text/speech conversion developed with **Android Studio** and **Java**.
- **FIGHT**: **3D local multiplayer** fighting game with 1v1 combat mechanics created with **Unity** and **C#**.
- **Shikha**: **2D side-scrolling puzzle-adventure** game with level progression built with **Unity** and **C#**.
- **Linear Equation Solver**: **Gaussian solver** and **Petri Net simulator** with visualization built with **Unity** and **C#**.
- **P2P Messaging App**: **Peer-to-peer** local network communication with **file sharing** built with **Android Studio**.
- **Spring SSO**: **Single Sign-On** implementation using **OAuth2** developed with **Spring Boot** and **Java**.
- **Glut Polygon Drawing**: Interactive **polygon rendering** and transformation tool built with **C++** and **OpenGL**.

Skills & Technologies

Programming Languages: Java, Python, JavaScript, TypeScript, C#, SQL, C++, PHP
ML/AI: PyTorch, TensorFlow, Keras, OpenCV, Scikit-learn, NumPy, Pandas, Matplotlib
Game Development & Design: Unity, Unreal Engine, Blender, AR Development, Photoshop
Cloud & DevOps: AWS (EC2, S3, Lambda, CloudWatch, DynamoDB), Docker, Kubernetes, Jenkins, Vercel
Databases: PostgreSQL, SQL Server, MySQL, Oracle Database, Firebase
Tools & Platforms: Spring Boot, React, Next.js, Mockito, Jest, RabbitMQ, Liquibase, MinIO, Lens, Android Studio

Extracurricular & Leadership Activities

SUST Tech Fest — **Apr 2019**
- Responsibilities in the Food and Convenience Section for participants.
- Participated in Inter-University Programming Contest.

Silver Jubilee Reunion — **Feb 2018**
- In charge of the Entertainment section (focused on alumni's children).

SUST CSE Carnival — **Aug 2017**
- Handled the gaming competition section.
- Participated in Inter University Programming Contest.

General Member — **2017 - 2020**
- CSE Society, Shahjalal University of Science and Technology