Snigdha Ghosh Dastidar

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EDUCATION

University of Illinois at Chicago (UIC), Chicago, IL May 2025
Master of Science in Computer Science | GPA: 3.77/4.00

University of Illinois at Chicago (UIC), Chicago, IL May 2023
Bachelor of Science in Computer Science, Minor in Mathematics | GPA: 3.88/4.00 Magna Cum Laude

Relevant Coursework: Advanced Topics in Software Engineering, Applied Cryptography, Database Systems, Data Science, Algorithms, Concurrent Programming, Natural Language Processing, Object-Oriented Languages and Environment.

SKILLS

Programming: Python, Java, C++, C, F#, OCaml, Dart (Flutter), R, SQL, MySQL, PHP, JavaScript, MATLAB, Go.
Technologies: FastAPI, Jupyter, JUnit, J2EE, Maven, React.js, Anaconda, Android Studio, Agile SDLC, Linux, XML.

EXPERIENCES

DREAM Lab, UIC Department of Mechanical and Industrial Engineering May 2024 – Present
Research Assistant

- Employ computer vision and machine learning algorithms to accurately segment medical images using U-Net, CNNs, ML frameworks (**PyTorch, TensorFlow**), **CUDA** acceleration, and **Docker** for reproducible training and deployment.
- Integrate deep learning and generative models (Diffusion, GANs) to build an automated framework to improve diagnostic.
- Design and implement scalable MLOps pipelines increase model training efficiency and reducing processing latency 20%.

CS Department, UIC August 2021 – May 2025
Teaching Assistant
Courses: Framework-based Software Development | Systems Programming | Software Design | Data Structures

- Assisted over 200 students to debug code, provide guidance on object-oriented, algorithms and **multi-threading** concepts.
- Created tasks on **software design patterns** and distributed computing principles that increased student scores by 15%.
- Led lab sessions, developed testing scripts (unit, integration), graded tasks, and interviewed students for oral exams.

AbbVie January 2023 – May 2023
Tech In Residence Program

- Built cross-platform (Android, IOS) **React** app with **Java-based native** modules to create user's personalized learning path.
- Implemented gamified ML-based skill assessments using RESTful APIs, resulting in a 30% increase in user engagement.
- Optimized app performance through integration of **asynchronous** processes and testing frameworks like JUnit and Jest.

Caterpillar Inc. Lab June 2022 – May 2023
Researcher

- Conducted in-depth research by interviewing over 30 employees to map data flow from machines to applications, identify breakdowns, and create standardized troubleshooting processes.
- Utilized a human-centered research approach to improve business processes, cloud databases, and network architecture.
- Ideated a scalable **event-driven** automated diagnostic system with **microservices,** Big Data tools (Kafka) and machine learning, reducing troubleshooting time by 25% and improving resolution accuracy by 15%.
- Led a **cross-functional** team to seamlessly present technical data to non-technical members, enhancing team collaboration.

PROJECTS

Real-time Audio Transcription Extension (JavaScript, HTML/CSS, Cloud AI APIs) - GitHub August 2025

- Developed a Chrome extension (**Manifest V3**) that captures audio from active browser tabs and transcribes it in real-time.
- Engineered audio streaming, buffer management, and chunk processing (30s) integrated with **REST APIs** (Google Gemini).
- Designed side-panel UI with controls, live transcript updates and optimized memory/CPU for long-duration audio capture.

Smart Credit Card Recommender (Python, Flask, JavaScript, HTML/CSS) - GitHub June 2025

- Built **Flask backend** with SQLAlchemy ORM (relational) to compute optimal credit card rewards using **algorithmic** logic.
- Explored distributed data processing with **Apache Spark** and **MapReduce** to simulate for large-scale transaction handling.
- Integrated automated unit testing scaffolding and followed version control best practices (Git/GitHub), **CI/CD** integration.

Signal Protocol Chat Application (React.js, Node.js, Python, JSON processing) - GitHub May 2024

- Developed a **full-stack encrypted** messaging web application using the Signal Protocol ensuring confidentiality, and seamless integration of UX elements and secure communication.
- Implemented X3DH for initial key exchange and Double Ratcheting algorithm for **forward secrecy** and encryption.
- Secured message exchange with integrity through a **relay server** managing key distribution and state synchronization.
- Deployed app using **GitHub Actions** on **GCP** with **WebSocket** for real-time communication and **MySQL** for data storage.