# Sadman Jashim Sakib

Researcher, Data Scientist, Developer

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## Profile of Skills

- Dedicated Computer Science Master's student specializing in software engineering and computational mathematics, with a focus on backend development

- Developed innovative tools and methodologies to optimize software efficiency, including a novel approach to dependency management using satisfiability problems

- Proficient in Python, Java, C, C++, and SQL, with expertise in development tools such as Eclipse and Visual Studio Code

- Proven ability to contribute to complex projects through research and teaching assistant roles at the University of Windsor

## Technical Skills

- **Programming Languages:** Python, Java, C, C++, SQL

- **Backend Technologies:** RESTful APIs, Microservices, Database Management (SQL, NoSQL)

- **Development Tools:** Eclipse, Visual Studio Code, Git, Docker

- **Data Analysis:** Machine Learning, Big Data Tools, Data Visualization

- **Soft Skills:** Communication, Team Collaboration, Problem-Solving, Project Management

## Education

**Master's Degree, Computer Science**                                                    **Sep 2023 – Apr 2025**
University of Windsor, Windsor, Canada

**Bachelor's Degree, Computer Science & Engineering**                                          **2018 – 2022**
BRAC University, Dhaka, Bangladesh

## Work Experience

**Research Associate (Software Engineering)**                                          **July 2025 – April 2026**
University of Windsor, Windsor, Canada

- Conducted academic research in software engineering under Dr. Muhammad Asaduzzaman, focusing on developing innovative software solutions and contributing to academic publications

- Performed literature reviews, designed software-based studies, and analyzed data using machine learning and big data tools, contributing to research outputs such as papers, presentations, and prototypes that advanced the field of software engineering

**Research Assistant (Computational Mathematics and Software Engineering)**          **Sep 2023 – Apr 2025**
University of Windsor, Windsor, Canada

- Supported research projects under Dr. Curtis Bright and Dr. Muhammad Asaduzzaman by applying computational mathematics and software engineering skills, contributing to the development of innovative research methodologies

- Maintained detailed databases and lab notebooks using Excel to document research progress and observations, ensuring accurate and organized data management for ongoing projects

**Graduate Teaching Assistant (Computer Science)**                                          **Sep 2023 – Apr 2025**
University of Windsor, Windsor, Canada

- Provided consultation hours, evaluated student work, and conducted labs for courses including COMP-8567, COMP-2067, and COMP-3540, enhancing student understanding and performance

- Proctored exams and ensured a supportive learning environment for students, contributing to a fair and focused examination process

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## Projects

**PyHealer: LLM- and RAG-enabled Agentic Repair of Python Execution Failures**

University of Windsor, Windsor, Canada                                                                    **2025 – 2026**

Developed an agentic AI system that combines Large Language Models (LLMs) with Retrieval-Augmented Generation (RAG) to diagnose and repair Python execution failures caused by missing dependencies, environment mismatches, and configuration errors, improving reproducibility of real-world Python programs.

**Tools:** Python, LLMs, Retrieval-Augmented Generation (RAG), Agentic AI, Error Analysis, Environment Management, Automation.

**Link:** Zenodo

**SMTpip: A Tool for Resolving Dependency Conflicts in Python Projects**

University of Windsor, Windsor, Canada                                                                    **2024 – 2025**

Developed a tool to resolve dependency conflicts by transforming them into satisfiability problems, enhancing efficiency in software engineering.

**Tools:** Python, PyPI API, Data Analysis, JSON & CSV.

**Link:** GitHub

**PyPI Package Info Collector**

University of Windsor, Windsor, Canada                                                                    **2023 – 2024**

Created a script to fetch and process Python package details from PyPI, storing version and dependency data for analysis.

**Tools:** Python, Data Analysis and PyPI API.

**Link:** GitHub

**Custom Python AST Parser**

University of Windsor, Windsor, Canada                                                                    **2023 – 2024**

Built a tool for parsing, analyzing, and visualizing Abstract Syntax Trees (AST) of Python code to improve code comprehension.

**Tools:** Python and AST.

**Link:** GitHub

**Custom Java AST Parser**

University of Windsor, Windsor, Canada                                                                    **2023 – 2024**

Developed a Java AST parser using Eclipse JDT to extract and analyze method declarations, variable declarations, and method invocations.

**Tools:** JAVA and AST.

**Link:** GitHub

**Understanding the Popularity of Packages in Maven Ecosystem**

University of Windsor, Windsor, Canada                                                                    **2023 – 2024**

Analyzed package popularity in the Maven ecosystem, contributing to insights on software dependency trends.

**Tools:** Github, Maven, Python, Data Analysis, JAVA and CSV.

**Link:** GitHub

**Virtual Teaching Assistant (VTA) Bot**

BRAC University, Dhaka, Bangladesh                                                                    **2021 – 2022**

Created a bot using natural language processing and deep learning to assist undergraduate students.

**Tools:** NLTK for NLP, Pytorch for Deep Learning, Data Analysis and CSV.

**Link:** GitHub

**Arcade Car Race**

BRAC University, Dhaka, Bangladesh                                                                    **2021 – 2022**

Designed and implemented a 2D arcade-style car racing game for Android, showcasing mobile development skills.

**Tools:** Android Studio, JAVA and XML.

**Link:** GitHub

## Extracurricular Activities

**Vice President**                                                                                        **Jan 2019 – Jan 2020**

BRAC University Computer Club, Dhaka, Bangladesh

- Supported the President in leading meetings and setting goals, while co-organizing events like hackathons, tech talks,

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and workshops

- Managed member engagement, liaised with sponsors, promoted the club, handled logistics, and mentored members in technical and career development

**General Secretary**                                                           **Jul 2016 – Jul 2017**

Notre Dame Nature Study Club, Dhaka, Bangladesh

- Led club initiatives, demonstrating leadership and organizational skills

## Publications

- S. J. Sakib, "Toward better dependency management in Python projects," *Electron. Theses Diss.*, no. 9776, 2025. [Online]. Available: https://scholar.uwindsor.ca/etd/9776

- S. J. Sakib, M. Asaduzzaman, C. Bright and C. Morgan, "Understanding the Popularity of Packages in Maven Ecosystem," 2025 IEEE/ACM 22nd International Conference on Mining Software Repositories (MSR), Ottawa, ON, Canada, 2025, pp. 364-368. [Online]. Available: https://doi.org/10.20944/preprints202504.2296.v1

- S. J. Sakib, B. K. Joy, Z. Rydha, M. Nuruzzaman, and A. A. Rasel, "Virtual teaching assistant for undergraduate students using natural language processing and deep learning," in *AIP Conf. Proc.*, vol. 2898, no. 1, Feb. 2024, pp. 030042-1–030042-7. [Online]. Available: https://doi.org/10.1063/5.0192090