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Abdur Razzak

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Education

M.Sc. in Computer Science (Expected Graduation: May 2025) Jan 2023 – Present
Masters Thesis: Memory Systems Modeling and Prediction
University: New Mexico State University, Las Cruces, NM, USA
Cumulative GPA: 4.00/4.00

B.Sc. in Computer Science and Engineering April 2014 – Sept 2018
Undergraduate Thesis: Developing chat-bot ensuring security and privacy issues using Blockchain
University: Shahjalal University of Science & Technology, Sylhet, Bangladesh
Cumulative GPA: 3.44/4.00

Technical Skills

Programming Languages	C/C++, Python, Java, ASSEMBLY
Software Development	Application Life Cycle, Optimization, Integration, Maintenance, Legacy Support, QA and Testing
Version Control	Git, Perforce
Tools and Frameworks	LEX, YACC, JUnit, Mockito, Robolectric, Slate, Banner
Performance Modeling	Clang Compiler, LLVM, Performance Modeling, Static Code Analysis
Parallel Programming	Multi-threading (C, Java), MPI, OpenMP, CUDA
Machine Learning	CNN, LSTM, SVM, YOLO8, YOLO11
Operating System	Linux (CentOS, Ubuntu), Android
Problem Solving	200+ problems in Data Structures and Algorithms
Programming Competition	Runners up at Fall 2024 and 2023 at Google Developers Student Club Programming Contest

Work Experiences

Graduate Research Assistant at New Mexico State University (NMSU) Jan 2023 – Present

- Collaborating with Los Alamos National Laboratory in Hardware-Software Co-design project to model Memory System.
- Significant improvement in developing a performance modeling tool using more faster and accurate static approach.
- Ongoing research
  - Benchmarking full application kernels to validate the static tool.
  - Brain tumor detection using YOLOv8 and YOLOv11.

Graduate Assistant at The Graduate School (NMSU) Jan 2023 – Present

- Designing and implementing automation workflow for application processing in Slate and Banner.
- Integrating secured API system to pull student applications posted on third-party sites.
- Maintaining and implementing new features for the Graduate School website (https://gradschool.nmsu.edu/)

Software Engineer at Samsung R&D Institute, Bangladesh Sept 2018 – Dec 2022

- **Samsung Internet Browser** [Android]
  - Optimized application memory usage by up to 70% by enhancing the Quick Access Module.
  - Implement new features and maintain large codebases.
- **Web Runtime on Samsung Watch** [Tizen]
  - Developed a secured runtime environment on the native C/C++ watch platform for web applications.
  - Improved web application launch time and life cycle performance.
  - Enabled C/C++ projects in cross-platform electron js with legacy web API support. Awarded **ICON of the Month** in 2020.
- **Application Testing** [Android]
  - Achieved 95% unit and 85% of User Interface test coverage for Samsung Internet modules.

Publications

- **Abdur Razzak**, Atanu Barai, Nandakishore Santhi, and Abdel Hameed Badawy. 2024. **Static Reuse Profile Estimation for Array Applications**. In Proceedings of the International Symposium on Memory Systems (MEMSYS '24). Association for Computing Machinery, New York, NY, USA, 235–244.
- Atanu Barai, Nandakishore Santhi, **Abdur Razzak**, Stephan Eidenbenz, and Abdel-Hameed A. Badawy. 2024. **LLVM Static Analysis for Program Characterization and Memory Reuse Profile Estimation.** In MEMSYS '23, ACM, Article 3, 1–6.
- Md Saiful Islam Bhuiyan, **Abdur Razzak**, et al. **BONIK: A Blockchain Empowered Chatbot for Financial Transactions.** In TrustCom 2020, IEEE, pp. 1079-1088.

Projects

System Programming and Simulation Tools

- **C-Compiler**: Built a compiler that takes C programs as an input, generates the symbolic table, creates the Abstract Syntax Tree (AST) and outputs machine readable assembly code. **LEX, YACC, C, and Assembly**. Spring 2024
- **Cache Simulator**: Created a cache simulator tool (L1 cache) to evaluate cache hit rate for given memory traces with customizable settings for cache size, associativity, and write policies. **C**. Spring 2023

Parallel Programming

- **Evaluate Platforms:** Analyzed runtime performance of five parallel platforms with datasets ranging from 10K to 1M. **C++, Java, MPI, OpenMP, CUDA** Spring 2024
- **Optimizing Thread-Level Parallelism:** Improved synchronization overhead and cache efficiency considering memory coherence and consistency for multi-threaded programs. **C++, Multi-threading** Spring 2024

Machine Learning

- **Multi-modal vs Single-Entity Model Comparison:** Developed a model that learns from both images and text using a combination of Convolution Neural Network (CNN) and Long Short-Term Memory (LSTM). **Python, SVM, CNN, LSTM** Fall 2023
- **Signature Verification:** Built a CNN (Convolution Neural Network) model that detects genuine or fraudulent signatures with 92% accuracy. **Python, TensorFlow, CNN** Fall 2018

Web Development

- **Checkers 2-Player Game:** Developed an interactive online game where players move pieces across a board. **JavaScript, Socket Programming, HTML, CSS** Fall 2023
- **Selenium Browser Task Automation:** Automated application processing tool to complete repetitive tasks on a browser tab using selenium. **Python, Selenium, HTML** Spring 2024

Relevant Courseworks

Parallel Programming	Computer Architecture	Data Structures & Algorithm Transitions
Compiler & Automata	Modern Web Technologies	Advanced Machine Learning

Extracurricular And Leadership

- Vice President at Graduate Wellness Initiative, New Mexico State University Sept 2023 – Feb 2024
- Vice President at CSE Society, Shahjalal University of Science & Technology, Bangladesh May 2018 – May 2019
- **Certificates**: Productive Leadership, Effective Communication, Android Architecture, Data Binding, Intents, Architect Big Data

Reference

Dr. Abdel-Hameed Badawy
Associate Professor of Electrical and Computer Engineering, New Mexico State University (NMSU) | badawy@nmsu.edu

Dr. Ranjit Koodali
Dean of the Graduate School and Associate Provost for International Affairs | New Mexico State University | rkoodali@nmsu.edu