Mohammad Mosiur Rahman Lunar
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Google Scholar | LinkedIn

Technical Skills

- **Data Analysis & Machine Learning**: TensorFlow, PyTorch, Keras, CUDA, Python (NumPy, SciPy, Pandas, Matplotlib), R.
- **Programming Languages**: Python, C++, Java, MATLAB.
- **Tools & Platforms**: Docker, Kubernetes, GNU Radio, Git, WinDbg, MS Visual Studio.
- **Technologies**: Distributed systems, RF communications, Wireless spectrum sensing.

Education

University of Nebraska-Lincoln (UNL) – Lincoln, NE
Ph.D. in Computer Engineering (ABD, expected April 2025)

- Relevant Coursework: Deep Learning, Design & Analysis of Algorithms, Queueing Models, Performance Optimization of Computing Systems & Network.

Bangladesh University of Engineering & Technology – Dhaka, Bangladesh
Bachelor of Science in Electrical & Electronic Engineering

Professional Experience

Software Engineer

Microsoft Corporation – Aliso Viejo, CA
August 2022 – July 2024

- Designed a memory usage monitoring tool for distributed queries on Microsoft Fabric, cutting execution time from 7 ms to 50 ns.
- Streamlined SQL engine stress-testing workflows, boosting team productivity for over 100 engineers.

- Enhanced query processing for Microsoft Azure Synapse Analytics by adding custom encoding, improving compatibility for 8,500+ organizations.
- Performed in-depth memory dump analyses, ensuring robust distributed query operations within .NET CLR pipelines.
- Developed and integrated an exponential backoff mechanism in the SQL frontend for rejected queries, ensuring robust end-to-end validation and thorough testing processes.

Graduate Research and Teaching Assistant

University of Nebraska-Lincoln – Lincoln, NE
August 2015 – August 2022

Research Works

- Designed and implemented predictive models for RF communication channels utilizing deep neural networks, accurately simulating real-world vehicle crash scenarios to enhance understanding of communication dynamics.
- Conducted analysis of 88TB of time-series wireless spectrum data, leveraging machine learning tools such as TensorFlow and PyTorch to extract meaningful patterns and insights.
- Investigated mmWave wireless signals for agricultural applications, introducing novel "new ground" reflection surfaces.
- Designed and implemented a MIMO small cell RF testbed, enabling real-time spectrum data collection and student research projects.

Teaching works

- Served as an instructor for the Internet of Things (IoT) lab course, providing hands-on guidance and technical support to 16 students, fostering practical skills in IoT technologies and applications.
- Mentored an undergraduate researcher as part of the Undergraduate Creative Activities and Research Experience (UCARE) Summer Program, providing guidance on research methodologies and project execution over a three-month period.

Grant Writing

- Contributed to the development of the proposal "SWIFT: LARGE: DYNAmmWIC: Dynamic mmWave Spectrum Sharing Techniques for Public Safety

Communications", which secured NSF funding under award CNS #2030272 for $500,000.

Software Engineer – Security Lab (R&D)

KONA Software Lab Limited – Dhaka, Bangladesh
July 2014 – July 2015

- Built a Certification Authority server for smart card applications.
- Optimized Shamir's Secret Sharing-based login system, reducing login time by 83%.

Selected Publications

1. **mmWave on a Farm: Channel Modeling for Wireless Agricultural Networks**
   S. Nie, M.M. Lunar, et al. – IEEE SECON 2022.
2. **Millimeter-wave agricultural channel measurements in corn and soybean fields**
   M.C. Vuran, M.M. Lunar, et al. – IEEE International Symposium on Antennas and Propagation 2022.
3. **OneLNK: Multi-vendor Testbed for Wireless Experimentation**
   M.M.R. Lunar, et al. – ACM WiNTECH 2022.
4. **Crashing Waves: Empirical Vehicle-to-Barrier Communication Models**
   M.M.R. Lunar, C. Stolle, R.K. Faller, M.C. Vuran – IEEE MASS 2021.
5. **A city-wide experimental testbed for next-generation wireless networks**
   Z. Zhao, M.C. Vuran, B. Zhou, M.M.R. Lunar, et al. – Ad hoc networks 111 (2021), 102305.
6. **Vehicle-to-barrier communication during real-world vehicle crash tests**
   S. Temel, M.C. Vuran, M.M.R. Lunar, Z. Zhao, A. Salam, R.K. Faller, C. Stolle – Computer Communications 127 (2018), 172-186.
7. **GMC: Greening MapReduce clusters**
   T.R. Toha, M.M.R. Lunar, et al. – IEEE ICC 2018.
8. **Cooling energy integration in SimGrid**
   A.S.M. Rizvi, T.R. Toha, M.M.R. Lunar, M.A. Adnan, A.B.M.A. Al Islam – NSysS 2017.
9. **Workload-based prediction of CPU temperature and usage for small-scale distributed systems**
   R.A. Shetu, T. Toha, M.M.R. Lunar, N. Nurain, A.B.M.A. Al Islam – ICCSNT 2015.

10. **A study on power management for wireless sensor networks**
    M.M.R. Lunar, A.B.M.A. Al Islam – NSysS 2015.

Certifications

- **Introduction to Concurrent Programming with GPUs** – Johns Hopkins University (Coursera, 2023).

Volunteer Services

- **Student Volunteer** – IEEE International Conference on Computer Communications (INFOCOM 2020).