Fahad Rahman Amik

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Education

- **Mila - Quebec AI Institute and McGill University** Montreal, Canada
  PhD Candidate in Electrical & Computer Engineering *Jan. 2023 - Present*
  - **Topic:** Machine Learning for Electronic Design Automation
  - **Supervisor:** Prof. Boris Vaisband
  - **Co-Supervisor:** Prof. Warren Gross

- **North South University** Dhaka, Bangladesh
  *Bachelor of Science in Computer Science & Engineering, CGPA: **3.79**/4.00* *May. 2017 - April. 2021*
  - More than **90%** marks on average
  - **Specialization Courses:** Deep Learning, Machine Learning, Data Communication & Network

Research Interests

Graph Representation Learning, Electronic Design Automation, Timing Analysis, Physical Design, and ML for EDA.

Publications & Preprints

- **Amik, F.R.**; Safari, Y.; Zhang, Z.; Vaisband, B.. "Graph-Based Timing Prediction at Early-Stage RTL Using Large Language Model". *Asia and South Pacific Design Automation Conference **(ASPDAC)**,* 2025.
- Safari, Y.; Corbier, A.; Saleh, D.A.; **Amik, F.R.**; Vaisband, B.. "Thermal Simulator for Advanced Packaging and Chiplet-Based Systems". *IEEE Transactions on Very Large Scale Integration (VLSI) Systems,* 2025 **(TVLSI)**
- Penmetsa, S.; **Amik, F.R.**; Zhang, Z.; et al.. "Generalizable and Relation Sensitive Netlist Representation for Analog Circuit Design". *34th Great Lakes Symposium on VLSI **(GLSVLSI)**,* 2024.
- Al Saleh, D.; Safari, Y.; **Amik, F.R.**; Vaisband, B.. "P* Admissible Thermal-Aware Matrix Floorplanner for 3D ICs". *IEEE 36th International System-on-Chip Conference (SOCC),* 2023.
- **Amik, F.R.**; Lanard, A.; Ismat, A.; Momen, S.. "Application of Machine Learning Techniques to Predict the Price of Pre-Owned Cars in Bangladesh". *Information Journal*, 2021
- **Amik, F.R.**; Tasin, A.; Ahmed, S.; Elahi, M; Mohammed, N.. "Dynamic Rectification Knowledge Distillation". *arXiv preprint*, 2022

Teaching Experience

- **McGill University** Montreal, Canada
  Graduate Teaching Assistant *Sep. 2023 - Present*
  - **Courses Assisted:** CCCS 321: Operating Systems Administration, COMP 535: Computer Networks, COMP 208: Computer Programming for Physical Sciences and Engineering.

- **North South University** Dhaka, Bangladesh
  Graduate Teaching Assistant *Jan. 2021 - April 2022*
  - **Courses Assisted:** CSE 115: Introduction to computer programming, CSE 425: Concepts of Programming Language, CSE 438: Data Communication & Network.

Industry Experience

- **Huawei Technologies Canada Co., Ltd.** Montreal, Canada
  Associate ML Researcher, Intern *Dec. 2024 - June. 2025*
  - Research Area : Graph Representation Learning for Performance Prediction

- **Huawei Technologies Canada Co., Ltd.** Montreal, Canada
  Associate ML Researcher, Intern *May. 2023 - Oct. 2023*
  - Research Area : Reinforcement Learning and Graph Neural Networks for Analog Transistor Sizing

- **Hilinkz Ltd.** Dhaka, Bangladesh
  Chief Executive Officer *Feb. 2021 - Dec. 2022*
  - Led the team and managed projects
  - Designed system architecture & database
  - Developed scalable and adaptable web applications using Laravel and React.js and created RESTful APIs for mobile applications

- **HURU Technologies Ltd.** Dhaka, Bangladesh
  Software Engineer Intern *Oct. 2020 - Jan. 2021*
  - Developed a web app for a Digital Service Hiring Solution using Laravel for the backend and admin panel, and jQuery for the frontend
  - Built Restful API's for the Flutter app

Achievements

- **MEDA Award** - McGill Engineering Doctoral Award *January 2023*
- Achieved **50% merit-based tuition waiver** in the admission of North South University, Bangladesh *April 2017*

Selected Projects

- **Graph-Based Timing Prediction at Early-Stage RTL Using Large Language Models**:
  - Developed an RTL dataset generator to produce thousands of synthetic circuits, creating a diverse graph dataset.
  - Converted gate-level Verilog into a DAG capable of handling **millions of nodes** and utilized LLemma-7B to generate node and graph-level embeddings from technology files, which were in a mathematical format.
  - Implemented a GAT to enhance graph representation, leveraging graph-level features after global mean pooling and before passing them to the linear layer.
- **Generalizable and Relation Sensitive Netlist Representation for Analog Circuit Design**:
  - Proposed a novel heterogeneous graph representation for analog circuits.
  - An embedding lookup table for each component type in the circuit with weights learned through backpropagation.
  - Introduced a novel RL reward method to optimize the unmet metric when other metrics are met.
  - Solved the sample inefficiency issue, providing better generalization and enhanced knowledge transferability across different specifications and circuit topologies, and outstanding performance in zero-shot settings without further training.
- **RFID Based Smart Print Zone for NSU**:
  - Acquired by NSU for **2 million BDT**.
  - Designed and developed an RFID-compatible printing system for centralized print zones to handle client requests.
  - Enabled users to print documents from home, offering a cost-effective alternative to conventional printing solutions.
  - Actively used by more than **30,000** students and faculty members at NSU.
  - **Technology:** PHP 7.4, Laravel 8, jQuery, MySQL.
- **Webapp for Impulse Hospital and a Full-Fledged HMS**:
  - Worked on a hospital management system, which encompasses accounting and billing services, prescription services, online physician services, human resource management, enhanced reporting system management, and an online pharmacy.
  - Currently used by **over 1,000** healthcare professionals and staff.
  - **Technology:** PHP 8, Laravel 8 (Restful API's), React, MySQL.
- **RyoGas: A SaaS-Based Web Application**:
  - Developed a web application providing IoT solutions for automating the remote management of fuel stations.
  - A SaaS architecture to manage accounting, gas price adjustments, bank statements, gas stock, and monthly reports.
  - Integrated a POS app to record gas sales and print receipts.
  - Currently in active use across **more than 550** gas stations.
  - **Technology:** PHP 7.4, Laravel 8, jQuery, MySQL.

Programming Skills

- **Programming Languages**: Python, PHP, JavaScript, C++
- **Frameworks/Libraries/Tools**: Pytorch, NumPy, scikit-learn, Matplotlib, Seaborn, Laravel, React, Git, Docker
- **Database**: MySQL, PostgreSQL
- **Server Management**: AWS(LightSail) Cloud, Heroku: Cloud Application Platform
- **Project Management**: Trello, Slack
- **CAD Tools**: Cadence Tempus, Cadence Genus, Synopsis PrimeTime, OpenRoad Flow

Certifications

- **Deep Learning with Pytorch: Build a Neural Network** Issued
  Issued by: deeplearning.ai. Certification URL.

Extra-curricular activities

- **General Executive of Compete McGill Club, McGill University:**
  Lead and manage the university's premier programming club, overseeing activities, programming contests, and collaborative projects to enhance software development skills among students.