Fahad Rahman Amik

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EDUCATION

Mila - Quebec AI Institute and McGill University Montreal, Canada
PhD Student 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

- **DAC Young Fellow** — Design Automation Conference (DAC)   *June 2025*
- **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.