PRESENTED TO:
PROFESSOR LILI WEI,
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING,
MCGILL UNIVERSITY

PRESENTED BY:
MOHAMMAD KAOSAIN AKBAR

PHD CHAT AND DISCUSSION WITH PROFESSOR LILI WEI

Contents

- Introduction

- Publication Record

- Summary of my previous research

- Why Am I interested to do PhD in this domain

- Alignment of My Experience with your research

- Tentative Career Plan

Link for the slides: kaosain.com/interview

Introduction

Name: Mohammad Kaosain Akbar

Current Role: AI Platform Dev at Desjardins

Location: Montreal, QC, Canada

Place of Birth: Dhaka, Bangladesh

Research Interests: *Human-Computer Interaction (HCI), Software Engineering, Machine Learning, Deep Learning, System Development, Computational Intelligence*

Introduction

Undergraduate Degree: Bachelor of Science in **Computer Science and Engineering**

Institution: North South University, Dhaka, Bangladesh

GPA: 3.84/4.77 (Summa Cum Laude)

Graduate Degree: Masters of Applied Science in **Systems Engineering**

GPA: 3.77/4.30

Institution: Concordia University, Montreal, QC, Canada

Thesis: Non-intrusive Load Monitoring using Machine and Deep Learning Approaches

Introduction

Timeline	Role	Organization
January 2019 to August 2019	Database Developer (Co-op)	Samsung Electronics Bangladesh
	Undergraduate Teaching Assistant	North South University
September 2019 to December 2020	Lecturer	Daffodil International University
May 2021 to May 2023	Graduate Machine Learning Researcher	Applied AI Institute – Concordia University

Introduction

Hobbies and Interest

- Playing console games.
  - Currently playing Pokemon Legend Z-A (on emulator)
  - Completed Pokemon Scarlet (unfortunately didn't complete the whole pokedex)
  - Detroit Become Human (made poor choices, Alice, Kara, Markus and Hank dies)

- Reading books
  - Currently reading: Ultralearning by Scott Young

- Cycling
  - Fav Area: Lachine Canal, towards the René-Lévesque Park.

- Photography
  - Mostly street and nature photography (Cameras: Canon 6D and DJI Action 4).

Publication Record

Mohammad Kaosain Akbar
Data and Machine Learning Researcher
Verified email at live.concordia.ca

Machine Learning   Deep Learning   Computational Modeling   Data Mining

FOLLOW

GET MY OWN PROFILE

TITLE	CITED BY	YEAR
A novel non-intrusive load monitoring technique using semi-supervised deep learning framework for smart grid MK Akbar, M Amayri, N Bouguila Building simulation 17 (3), 441-457	30	2024
Prediction of absenteeism at work using data mining techniques M Skorikov, MA Hussain, MR Khan, MK Akbar, S Momen, N Mohammed, ... 2020 5th International conference on information technology research (ICITR …	17	2020
Evaluation of regression models and Bayes-Ensemble Regressor technique for non-intrusive load monitoring MK Akbar, M Amayri, N Bouguila, B Delinchant, F Wurtz Sustainable Energy, Grids and Networks 38, 101294	10	2024
Deep learning based solution for appliance operational state detection and power estimation in non-intrusive load monitoring MK Akbar, M Amayri, N Bouguila International Conference on Industrial, Engineering and Other Applications …	6	2023
ResiDualNet: A novel electric vehicle charging data imputation technique to enhance load forecasting accuracy BM Fahim, MK Akbar, M Amayri Building Simulation, 1-26	4	2025
Assessing the Effectiveness of Supervised and Semi-supervised NILM Approaches in an Industrial Context MK Akbar, M Amayri, N Bouguila, F Wurtz, B Delinchant Proceedings of the 2023 6th International Conference on Computational …	3	2023
Evaluation of Two Novel Supervised Non-Intrusive Load Monitoring Techniques MK Akbar, M Amayri, N Bouguila 2024 IEEE 12th International Conference on Smart Energy Grid Engineering …	1	2024
Short-term EV load forecasting using Kolmogorov Arnold Networks BM Fahim, MK Akbar, M Amayri 2025 IEEE 34th International Symposium on Industrial Electronics (ISIE), 1-6		2025
GAF-TCN NILM: A Novel Approach to Non-Intrusive Load Monitoring Using Image Analysis with Gramian Angular Field and Temporal Convolutional Networks MK Akbar, M Amayri, N Bouguila 2025 IEEE 34th International Symposium on Industrial Electronics (ISIE), 1-6		2025
Non-Intrusive Load Monitoring using Machine and Deep Learning Techniques MK Akbar Concordia University		2023
Mcd-Nilm: A Multi-Scale Clustering and Decoding Approach for Appliance and Ev Energy Disaggregation BM Fahim, MK Akbar, M Amayri Available at SSRN 5377029		

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h-index	4	4
i10-index	3	3

34

17

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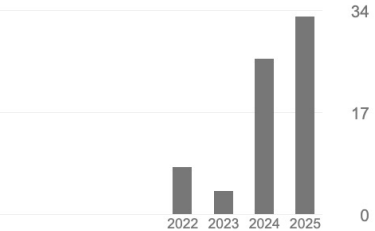
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6

Summary of My Previous Research

- Conducted research on Non Intrusive Load Monitoring using deep learning models such as CNN, BiLSTM and TCN for energy disaggregation

- Developed ResiDualNet, a residual BiLSTM CNN model for missing data imputation in electric vehicle charging datasets that improved forecasting accuracy

- Designed Bayesian Ensemble Regressor and other regression models for appliance level power estimation and anomaly detection

- Created GAF TCN based framework that integrates temporal encoding for better state detection and interpretability

- Completed undergraduate capstone titled "I Am Here," a user centered and privacy preserving security service for emergency support

Why I Am Interested to do PhD in this domain

- I want to explore how intelligent and data-driven methods can make complex software systems more dependable and easier to maintain.

- I enjoy identifying hidden patterns in software behavior and using analytical approaches to improve software performance and reliability.

- I am deeply interested in combining empirical research with experimentation, where data and code analysis lead to practical improvements in software quality.

- I see the PhD journey as a chance to strengthen my ability to design research frameworks that solve real-world software challenges using both AI and systematic engineering principles.

- I am motivated by curiosity and understanding how software evolves, fails, and can be made more robust through automation and learning techniques.

Alignment of My Experience

- I have worked extensively on machine learning and deep learning models, which can be applied to analyze and predict software behavior.

- My past projects involved data-driven analysis of large time-series and system datasets, which aligns with data mining and software analytics research.

- I have hands-on experience in Python, model development, and skills that support research in intelligent software testing and maintenance.

- My earlier research focused on improving model performance and interpretability, which connects with the broader goal of enhancing software reliability through analytical methods.

- I am used to combining theory with implementation such as designing models to validating them with real-world data. This mindset that fits research-driven software engineering.

Tentative Career Plan

- Short-term: Contribute to impactful publications and collaborative projects under your supervision.

- Medium-term: Continue as a postdoctoral researcher in Software Engineering, System Development and AI

- Long-term: Become a Professor and establish my own research group focused on Software Engineering with enhancement by Data Mining and AI approaches.

Thank You Very Much