Mohammad Abdul Hadi

SE | Machine Learning | NLP
Data Visualization | Visual Analytics

CONTACT

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CURRENT WORK

In my current work, I am using advanced Machine Learning approaches (i.e., Transfer Learning and Online Learning) to solve critical Software Engineering problems, such as detecting anomalous software behavior, classifying issues and sentiments in software-related texts, generating code comments, etc. I am also working on different Topic Modeling and Text Classification techniques for handling software development issues faced by application developers. In terms of software products, my goal is to design AI-driven components that can help both individuals and communities solve their problems. Through the application of various analytical tools and meticulously designed algorithms, I would like to expand my expertise by incorporating my skills into academic and industrial projects with practical applications.

Other than being a researcher, I mentor, motivate, and supervise underprivileged undergrads from Bangladesh who aim to become stellar researchers.

EDUCATION

MSc in Computer Science (Pursuing)
Sep 2019 — Jan 2022

The University of British Columbia, BC, Canada

CGPA: 4.33 / 4.00 (*Summa Cum Laude*)
Supervisor: Dr. Fatemeh H. Fard

BSc in Computer Science and Engineering
May 2014 – May 2018

North South University, Dhaka, Bangladesh

CGPA: 3.99 / 4.00 (*1st position in School of Engineering and Physical Sciences*)
Summa Cum Laude, Vice Chancellor's Gold Medalist

SCHOLARSHIPS, AWARDS & ACCOLADES

- University Graduate Fellowship
- Dean's Entrance Scholarship
- Vice Chancellor's Gold Medal
- Faculty Research Grant
- Capstone Project Design Grant
- 100% Undergraduate Scholarship
- Secondary School Certificate Scholarship
- Junior School Certificate Scholarship

[UBC - 2020]
[UBC - 2019]
[NSU - 2019]
[EU - 2018]
[NSU - 2018]
[NSU - 2014]
[CCS - 2010]
[SBK - 2004]

TECHNICAL KNOWLEDGE

- **Languages** — C, C++, C#, Java, Python, R, SQL, Assembly, Verilog;
- **Web and Scripts** — ASP, PHP, JavaScript, D3.js, Node.js, JSON, AJAX, HTML, CSS;
- **Frameworks** — ASP.NET, Laravel, Bootstrap, OOPHP;
- **Tools** — MATLAB, Logisim, Micro-wind, Pspice, emux8086;
- **Libraries** — PyTorch, Tensorflow, Keras, OpenNN;

KEY ATTRIBUTES

- Determined to make a difference to individuals and communities;
- Fastidious, urbane, and eloquent with excellent communication skills;
- Approachable and non-judgmental;
- Self-Motivated, quick learning, and patient;
- Willing to step outside the comfort zone to cultivate diverse skillset;
- Always on my way to take challenges to unlock untapped potential;
- Eager to build a rich repertoire by searching beyond immediate horizon;

WORK EXPERIENCE

The University of British Columbia, BC, Canada
Sep 2019 — Aug 2021

Research Assistant
- Machine Learning
- Software Engineering
- Natural Language Processing
- Data Analysis and Visualization

Teaching Assistant
- COSC 328: Computer Networking
- COSC 304: Database Management System
- COSC 341: Human-Computer Interaction
- COSC 407: Parallel Computing

Software Analytics Research (SOAR), Sinagapore Management University (SMU)
July 2021 – Dec 2021

Research Assistant

> **Project:** DeepHarvest: The tool collects and links pieces of information about APIs in different libraries from diverse online resources; It also disambiguates simple API names.
> **Supervisors:** Dr. David Lo, SMU; Dr. Fatemeh H. Fard, UBC.

Scrawlr Inc., BC, Canada
May 2021 – Aug 2021

Software Developer Intern (Mitacs)

> **Project:** High-throughput linguistic content comparison and sentiment analysis.
> **Supervisors:** Dr. Fatemeh H. Fard, UBC; Dr. Jonathan Shahen, Scrawlr.

Niedner Inc., QC, Canada
Jan 2020 – Jun 2020

Software Developer Intern (Mitacs)

> **Project:** Modeling and optimization of woven composite hydraulic tubes, to reduce in-service defects and failures—Phase II.
> **Supervisors:** Dr. Abbas S. Milani; Dr. Fatemeh H. Fard, UBC.

Eastern University, Dhaka, Bangladesh
Jul 2018 — Aug 2019

Lecturer, Department of Computer Science and Engineering

Courses Taught:
- Mathematical Analysis for CS
- Digital Logic Design
- Structural Programming - JAVA
- Computer Architecture
- Web Programming
- Design and Analysis of Algorithm
- Intro to Software Engineering

North South University, Dhaka, Bangladesh
Aug 2016 — Aug 2019

Lab Instructor, Department of Electrical and Computer Engineering
- Computer Organization and Architecture
- Programming Language II - Java
- Database Systems
- Digital Logic Design
- Microprocessor, Micro-controller and Peripheral Devices

Teaching Assistant, Department of Electrical and Computer Engineering
- Introduction to VLSI design.
- Introduction to Frameworks for Web-development

Teaching Assistant, Department of English and Modern Languages
- Introduction to Composition - I
- Introduction to Advanced Intermediate Compositions
- Introduction to Fiction and Creative Storytelling

AntTech, Dhaka, Bangladesh
Feb 2016 — Jan 2018

Apprentice Software Engineer
- Web development
- Social Media Payment Portal Development
- Enterprise Mobile app development

VOLUNTEER EXPERIENCE

- ICSE 2021 — May 2021
- ICSE-2020 — Jun 2020 – Jul 2020
- ACM Joint ESEC/FSE, 2020 — Nov 2020 – Dec 2020

Student Volunteer

Student Volunteers (SV) managed sessions at different time slots around the globe. SVs were given training on new technologies so that we could be part of large-scale production. SVs helped to organize live streaming of the conference presentations and online Q&A.

- **Archer K. Blood Library and EMK Center,** — Mar 2018 — Aug 2018
  USA Embassy, Dhaka, Bangladesh

Workshop Designer & Instructor

- Designing and conducting workshops to teach technical web development and freelancing skills for the underprivileged Bangladeshi community.
- Technological Soft-Skill development programs for teenagers and preteens.

- **NSU ACM Student Chapter,** — Jul 2017 — Mar 2018
  North South University, Dhaka, Bangladesh

Programming Tutor and Workshop Designer

- Design, Implementation, and Analysis of Algorithms
- Basic and Object-Oriented Programming
- Problem Solving using C, C++, Java, Python

PUBLICATIONS

- **M. A. Hadi** and F. H. Fard. 2021. Evaluating Pre-Trained Models for User Feedback Analysis in Software Engineering: A Study on Classification of App-Reviews. arXiv preprint arXiv:2104.05861. 2021.
- **M. A. Hadi** and F. H. Fard. 2020. AOBTM: Adaptive Online Biterm Topic Modeling Algorithm for Version Sensitive Short Texts Analysis. IEEE ICSME 2020.
- **M. A. Hadi** and F. H. Fard. 2020. ReviewViz: Assisting Developers Perform Empirical Study on Energy Consumption Related Reviews for Mobile Applications. ACM MOBILESoft 2020.
- **M. A. Hadi** and F. H. Fard. 2020. Geo-Spatial Data Visualization and Critical Metrics Predictions for Canadian Elections. IEEE CCECE, 2020.

RESEARCH PROJECTS (1/2)

- *DeepHarvest*: This tool collects and links pieces of information about APIs in different libraries from diverse online resources, such as GitHub, Twitter, Stack Overflow, Stack Exchange, Jira Issue Comments, etc.
  [*Continuous Project - SOAR, SMU 2021*]
- *DeepRecommend*: Outputs API sequences that are most relevant and positively rated for a functionality query expressed in mixed natural language and source code based on data curated by DeepHarvest.
  [*Continuous Project - SOAR, SMU 2021*]
- *Study on the Frontline Fighters against COVID in Bangladesh*: This study aims to understand the stress experienced by the frontline doctors at the COVID-19 specialized hospitals. We examine the stark difference between health care practices, environments, and policies between developed and underdeveloped countries. We thoroughly investigated several unexplored aspects of underdeveloped countries' healthcare ecosystems to help the community shape more sustainable policies.
  [*Continuous Project - NSU 2021*]
- *High-throughput linguistic content comparison and sentiment analysis*: Assessed different architectures and current solutions; we finally combined multiple inputs (e.g. lexical features) to enhance the existing models for online adaptive syntactic plagiarism detection.
  [*Scrawlr Inc., BC 2021*]
- *Evaluating Pre-Trained Models for User Feedback Analysis in Software Engineering*: A Study on Classification of App-Reviews.
  [*Continuous Project - FardLab, UBC 2021*]
- *AOBTM*: Adaptive Online Biterm Topic Modeling Algorithm for Version Sensitive Short Texts Analysis.
  [*FardLab, UBC 2020*]
- *Data Visualization and Analysis for Archaeological Records:* Analysis of Attribute-to-Attribute co-occurrence patterns in the OpenContext archive on Digital Index of North American Archaeology (DINAA).
  [*FardLab, UBC and Dept. of Archeology, UBC – 2020*]

RESEARCH PROJECTS (2/2)	• *Data Analysis, Modeling and Optimisation of woven composite hydraulic tubes*, to reduce in-service defects and failures - Phase II (Interactive analytical tool for customizable NN architectures and ML Models.) [*Niedner Inc., Fardlab, UBC, and MMRI, UBC – 2020*] • *ARISE*: Artificial Intelligence in production planning and management; Implemented a simple proof-of-concept Transfer Learning approach for Josef Schulte. [*Universität Paderborn, DE, Josef Schulte, DE, Fardlab, UBC, and MMRI, UBC – 2020*] • *ReviewViz*: Assisting Developers Perform Empirical Study on Energy Consumption Related Reviews for Mobile Applications. This tool automatically collects and labels energy related reviews from Google Play Store. [*FardLab, UBC – 2020*] • *Geo-Spatial Data Visualization* and Critical Metrics Predictions for Elections: Successfully predicted the outcome of 10/13 provincial elections from 2018 to 2020. [*FardLab, UBC – 2020*] • *Visualization tool that illustrates the propagation of spurious hadiths among narrators*: The tool also tags the propagation points with some recorded events (e.g., wars, personal/clan dispute). We studied user reflection on Hadiths (quotes from Prophet Muhammad (PBUH)) after their exposure to our visualization tool. We suspected that these tagged events could have provoked aberrant dissemination of particular quotes, making them the most popular and referenced throughout history. [*MIT and NSU – 2019*] • *A web application that proposes varying consultation fees for doctors in their private practices :* The web based tool depends on several parameters (e.g., severity and ubiquity of the diagnosed disease, the effort put into detecting the disease, patients' perceptions on doctors' behavior). We used fuzzy logic classification and Linear Discriminant Analysis as the parameters were non-conforming throughout the entire user population. [*NSU and EU – 2019*] • *A Quantitative Study to Understand the Impact of Smartphone Apps Usage on Students' Academic Results* in the Context of Bangladesh: The study showed negative correlation between high social media application usage and satisfactory above average academic results. [*EU- 2019*] • *A pet like robot for blind people with autonomous navigation* implementing Simultaneous Localization and Mapping (SLAM) algorithms. For unstructured environment mapping, an XBOX-360 Kinect was used along with a 3D-Depth Camera; for localization, a Neato XV-11 LIDAR was used. The whole system was based on Linux Operating System. This project was highly acclaimed in NSU Capstone 2018. [*NSU 2018*] • *Web Application for immigrant donor outreach* to help poor students in the underdeveloped countries. [*NSU 2018*] • *A warehouse management system* and a web-portal for Teachers' Association of Chittagong City Corporation, Bangladesh. This was part of a project funded by Ministry of Education, Govt. of Bangladesh. [*CCC 2017*] • *An efficient course advising system* for North South University implementing a Bidding Approach coupled with Gale-Shapley Student Deferred Acceptance algorithm. [*NSU 2017*] • *An Aeroplane turbulence detection device* capable of measuring simultaneous Passengers' heartbeat using the "Inertial Measurement Unit" to predict stressful conditions. [*NSU 2016*] • *A low-cost Braille device* with Arduino micro-controller with a voice synthesizer for word pronunciation. [*NSU 2016*] • *4-Bit ALU with 16 operations* with an implementation within the micro-programmed basic computer. [*NSU 2016*]

REFERENCES

Dr. Fatemeh H. Fard	**Dr. Abbas Milani**	**Dr. David Lo**
Assistant Professor	Professor	Professor
(Ph.D., University of Calgary)	(Postdoctoral, MIT;	(B.Eng., NTU; Ph.D., NUS)
Computer Science, Data Science	Ph.D., University of McGill)	School of Information Systems
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