

YEHYA FARHAT

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Research Interests: Machine Learning | Constrained Optimization | AI for science and engineering | Theoretical Machine Learning | End-to-End Optimization | Differential Optimization

EDUCATION

Syracuse University

Master of Science in Computer Science

May 2023
Syracuse, NY

- GPA: 3.64 / 4.0
- Graduate Chess Club President

American University of Beirut

Bachelor of Science in Computer Science, Minor in Mathematics

Dec 2020
Beirut, Lebanon

PUBLICATIONS

Farhat, Yehya,

"On the Robustness of Decision-Focused Learning".

(Submission in Progress) (2024). Artificial intelligence for Operations Research Workshop, AAAI Conference on Artificial Intelligence (AAAI)

Farhat, Yehya,

"End-to-End Decision Focused Learning Using Learned Solvers".

(2023). Theses - ALL. 714. <https://surface.syr.edu/thesis/714>

RESEARCH EXPERIENCE

Research Intern

Syracuse University

Advisor: [Prof. Venkata Gandikota](#)

September 2023 – Current

- Studying the expressiveness of piece-wise linear functions attained by deep neural networks. Our work currently involves analyzing the dynamics of linear regions derived from the learned functions, with a focus on the impact of various loss functions, optimization algorithms, and training cycles
- Investigating efficient methods for counting the number of linear regions in deep neural networks

Research Assistant (Master's Thesis)

Syracuse University

Advisor: [Prof. Ferdinando Fioretto](#)

January 2022 – May 2023

- Conducted a survey of End-to-End constrained optimization learning and researched an amortized method for the decision-focused learning paradigm. Developed surrogate machine learning models for continuous relaxed functions of discrete optimization problems and substituted the learned models with optimization solvers within the pipeline

WORK EXPERIENCE

IT Consultant

Syracuse University College of Law

October 2021 – May 2023
Syracuse, NY

- Setup and configured proxy servers for 30+ RoomWizard devices used across the law school. New proxy server ensured smooth and uninterrupted functionality
- Imaged all new devices and connected them to university servers. Proposed and wrote automated test scripts. Maintained old devices and documented imaging policies and server migrations.

Data Scientist

Qnovo

June 2022 – August 2022
Milpitas, CA

- Operated as a full-stack engineer to design and build a battery testing platform and a corresponding user interface to query the database, reduced time spent on ad-hoc reporting from 2-3 days to 10 minutes
- Cleaned and performed exploratory data analysis on 5M + rows of time-series data. Analysis was used to confirm the existence of a sensitivity problem in battery capacity estimates

- Devised a cloud-based microarchitecture and employed Microsoft Azure to establish a correspondence between CMMS software and the client's IoT software, thereby streamlining task creation between software systems and reducing task creation time to zero
- Designed and implemented an integration module to connect multiple ERP, IoT, and CMMS software systems. The module included an interface allowing clients to specify what information to streamline between software systems

TEACHING EXPERIENCE

Undergraduate Introduction to Object-Oriented Design

Teaching Assistant
CSE 283 | Syracuse University

Spring 2023
Syracuse, NY

- Undergraduate course: Fundamental software design concepts of functional decomposition and object-oriented design. Taught by [Prof. Farzana Rahman](#)

Undergraduate Computer Organization & Programming Systems

Teaching Assistant
CIS 341 | Syracuse University

Spring 2023
Syracuse, NY

- Undergraduate course: Essentials of computer organization. digital logic, microprogramming, processors, memories, input-output devices, instruction sets. Taught by [Prof. Farzana Rahman](#)

Graduate Assured Programming and Formal Methods

Teaching Assistant
CIS 623 | Syracuse University

Fall 2022
Syracuse, NY

- Graduate-level core course: Reasoning about programs through the specification, design, and realization of provably correct programs. Taught by [Prof. Andrew Lee](#)

Graduate Advanced Computer Architecture

Teaching Assistant
CIS 655/CSE 661 | Syracuse University


Spring 2022
Syracuse, NY

- Graduate-level core course: Memory systems, pipelining, simultaneous multithreading, run-time optimization, array processing, parallel processing, multiprocessing. Taught by [Prof. Ehat Ercanli](#)

PROJECTS


Optimal Stopping Problem with unknown variable

December 2021

- Analyzed one form of the optimal stopping problem known as the secretary problem which has a closed form solution. The equation requires the number of candidates to be known beforehand. Collaborated with a team member to attempt to find an efficient solution to the same problem but without access the number of candidates; [Project Link](#) 

University Petition System

December 2020

- Collaborated with three team members to develop a petition website for the American University of Beirut. This platform enables students to submit their petitions along with their transcripts, which are automatically parsed. The chairperson is notified if the students meet the petition requirements.
- This project enabled us to significantly streamline the process, saving the chairperson countless hours previously spent organizing and reviewing transcripts to determine if the requirements have been met;
- Technology stack: JavaScript | Node.js | React | MongoDB
[Project Link](#) 

Power Monitor

July 2020



- Cofounded & developed power monitor, pitched to Lebanon's public government energy sector. Enable the sector to transition into digital bills and cut down on the required transportation. Saving the government thousands of dollars each month
- Allows users to track daily/monthly usage, electricity bill, and carbon footprint using the phone application; [Product Website](#) 

Image-Manipulation tool (IMP)

December 2019

- Collaborated with a team to create an application where users can add any image for manipulation. changing image color, sharpening, cropping, zooming, and applying other Pixel manipulation algorithms;
 - Technology stack: Processing | JavaScript
- [Project Link](#) 

OUTREACH & EXTRACURRICULAR

President and Co-Founder

February 2022 – May 2023

Syracuse University Graduate Chess Club

Syracuse, NY

- Co-Founded the graduate chess club at Syracuse University, served the role of Acting President. orchestrating the club's growth, with over 150+ graduate participants during my tenure. Successfully facilitated a merger between the graduate and undergraduate chess clubs, fostering a cohesive and inclusive chess community within Syracuse University

Math and Physics Tutor Volunteer

January 2018 – July 2019

MMKN

Beirut, Lebanon

- Served as a part-time Physics and Mathematics teacher for students in grades 9 and 10. Specifically, I conducted afternoon classes catering to refugees and members of minority communities in Lebanon.

Solo Blogger

September 2023

- [What Are the Machines Learning?](#)

Farhat, Y. (2023, September 18). What Are the Machines Learning? YF's Science Journal.

<<https://yehya-farhat.github.io/blog/2023/MLmodels/>>

SKILLS

– Python	– Julia	– Google Firtbase	– Keras
– C++	– Visual Studio	– Microsoft Azure	– Flask
– C	– XCode	– Selenium	– React
– SQL	– Android Studio	– REST API	– Flutter
– R	– Heroku	– GraphQL	
– JavaScript	– CUDA	– Pytorch	
– Dart	– MongoDB	– Numpy	

Languages: English, Arabic, and French (basic)