YEHYA FARHAT

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EDUCATION

Syracuse University   *May 2023*
Master of Science in Computer Science   Syracuse, NY

— GPA: 3.64 / 4.0
— Thesis: *E2E Decision-Focused Learning Using Learned Solvers*
— Graduate Chess Club President

American University of Beirut   *Dec 2020*
Bachelor of Science in Computer Science, Minor in Mathematics   Beirut, Lebanon

PUBLICATIONS

Farhat, Yehya,
"On the Robustness of Decision-Focused Learning" 🔗
(Under Review) (2023). Artificial intelligence for Operations Research Workshop,
AAAI Conference on Artificial Intelligence (AAAI)

RESEARCH EXPERIENCE

Research Intern   *September 2023 – Current*
Syracuse University
Advisor: Prof. Venkata Gandikota

— We are studying the expressiveness of piecewise linear functions attained by deep neural networks through the lens of linear regions. Our current work involves analyzing the number of regions attained by 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)   *August 2022 – May 2023*
Syracuse University
Advisor: Prof. Ferdinando Fioretto

— Conducted a survey of End-to-End constrained optimization learning and researched an amortized method for the Decision-Focused Learning paradigm. Our framework involves developing a surrogate machine learning model for a continuous relaxation of the discrete optimization problem and substituting the learned model with the optimization solver within the pipeline.
— *"End-to-End Decision-Focused Learning Using Learned Solvers"* 🔗
(2023). Theses - ALL. 714. https://surface.syr.edu/thesis/714

WORK EXPERIENCE

IT Consultant   *October 2021 – May 2023*
Syracuse University College of Law   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 for law school website. Updated and documented imaging policies for server migrations

Data Scientist   *June 2022 – August 2022*
Qnovo   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

Software Engineer   *April 2021 – July 2021*
Precast FZCO   Dubai, UAE

— 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

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

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

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

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.

Science 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/⟩

SOFTWARE

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

REFERENCES

Dr. Ferdinando Fioretto
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