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## EDUCATION

### Bachelor of Artificial Intelligence

Aug 2020 - Jun 2024

*Kafr El-Sheikh University*

GPA : 3.7

Main Courses: Linear Algebra, Statistics & Probability, Data Structures & Algorithms, Machine Learning, Deep Learning, Natural Language Processing, Introduction to Reinforcement Learning and multi agent design, Cognitive Psychology.

## PROFESSIONAL EXPERIENCE

### NLP R&D Engineering Internship

July 2023 - Dec 2023

*SpeedLegal*

*Remotely, California, USA*

- Fine-tuning a pre-trained BERT model for an extractive question answering task on license agreements. The outcome was that the extractive model was able to do average of 20% exact match score and 65% on a set of 16 clauses leading to approximate 15 minutes decrease in contract review by the legal team.
- Working with model Interpretability and Explainability (LIME). This helped in uncovering the details of the model reasoning in saying why it classified certain legal text under certain classes for reliability.
- Building Retrieval Augmented Generation pipelines with LLMs like GPT-4 & LLaMA2 and Embedding Models like BGE large. Thereafter, properly evaluating the information retrieval system using precision@k, recall@k & mean reciprocal rank. This improved the contract review process by iterating and reaching a high recall@6 of 96% for NDA agreements.

## TEACHING EXPERIENCE

### Teacher Assistant (TA)

Jan 2023 - March 2023

*Kafr El-Sheikh University*

- Assisting in teaching and preparing reinforcement learning lectures, materials as well as demonstrative lab exercises in the "Introduction to Machine Learning" course for second year students with the main instructor Nora El-Rashidy.
- Teaching basic RL fundamentals including: Multi-Armed bandits, Markov Decision Processes (MDPs), Bellman Equations and optimality & Dynamic programming. (class size: 30 students)

## PROJECTS

### DominoRL

Oct 2023 - On Going

*Thesis Project*

- Developing an agent that plays the two-player partially observable MDP blocking game of dominoes using self-play deep reinforcement learning.

### Crash PPO Agent

Jan 2023

*Research Project*

- Implementing, from scratch, a policy gradient algorithm gave me insights and hands on experience on deep reinforcement learning, specifically, Proximal Policy Optimization (PPO) on an agent that plays the retro game Crash Bandicoot: the huge adventure.

- Using Pytorch for creating the actor and critic shared CNN architecture as well as the heads for the actor and the critic.
- Using openAI's gym retro environment. The agent learned to play one level of the game with an average cumulative rewards of 75+.

Project Link on Github: [CrashAgentPPO](#)

## AWARDS

### **2nd Place In Nile University's Undergraduate research forum**

**October 2020**

*Nile University*

- This was an undergraduate research competition that I got second place in by training an End-To-End facial recognition system using OpenCV for car security surveillance which checks whether the driver is the car owner or not to prevent burglary.

## ACTIVITIES & COMMUNITY SERVICE

### **Algorithms & Data Structures Tutor in (GDSC)**

**July 2022 - September 2022**

*Kafr El-Sheikh University's Google Developer Student Club*

- I gave teaching sessions with other tutors about Data Structures and Algorithms.

### **Artificial Intelligence Study Roadmap**

**August 2022**

*Kafr El-Sheikh University*

- I published an article where I built an organized, well-planned and resourceful academic undergraduate road-map for studying Artificial Intelligence referencing universities that teach this major.
- Specifically built with the nearest MOOCs (Massive Online Open Courses) that have the same content. I listed all the resources and citations. roadmap : [AI Academic Road-map](#)

## SKILLS

### **Programming**

Python, C, OOP, Git, Pytorch, Linux

### **Communication**

Arabic (native), English (Fluent), German (beginner)