Personal Statement

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I am a B.Sc Computer Engineering student at Amirkabir University of Technology. As I write, I find myself eager to take a journey through my experiences, each of which has significantly shaped the person I am today and my objectives.

Introduction

It all began at **NODET**[1] high school, where I found myself head over heels for **MATH** and its mind-bending challenges. Even now, nothing can fill the passion I had while tackling those math Olympiad questions back then. Exploring discrete mathematics opened the door to computer Olympiads, where the computer stealthily won the race for my affection. My enthusiasm sometimes reached such a point that spending five hours on a single question felt like an hour.

These continued until I decided to pursue computer engineering as my university major. Yet, to gain admission to the top-tier universities in Iran, all students must undergo the rigorous and competitive **Konkour** entrance exam. Executing a comprehensive year-long plan, with unwavering consistency and daily scrutiny, proved to be the winning strategy. Finally, I achieved a remarkable **174 rank**, securing a position in the top 0.3% among 60,000 applicants. Starting my computer engineering journey at **Amirkabir University**, ranked 3rd in Iran, became the primary gateway to my subsequent achievements.

Bachelor's Years

Personal Growth Stepping into the university, I aimed for personal and academic growth by actively participating in various groups. Involvement in university competitions and webinars equipped me with skills to enhance group dynamics and efficiently manage **tasks I had never faced before**. In the AAIC competitions, for instance, I adeptly prepared the venue in less than 6 hours by collaborating with designers. The most valuable lesson I gained from that experience was the art of **effective communication** and the responsibilities that come with a **managerial role**.

Academic Growth To cultivate my academic aspect, I highly tried to contribute during **class discussions**. This not only brought me closer to university professors but also connected me with like-minded students who shared a passion for improvement. Furthermore, my role as a **teaching assistant** revealed another fascinating aspect of mine. Designing innovative projects to challenge students and gauge their abilities was exceptionally captivating. Also, I take great satisfaction in the skill I acquired to present topics clearly and coherently during that period. Besides, my consistent effort was to be among the top students, and I am proud to affirm that I successfully attained this objective with an overall **GPA of 3.94 out of 4**.

Work Experience By the end of the third year, I began to feel the lack of work experience in my journey. Despite advice from others to apply to more attainable companies, I was confident about my qualifications and aimed for Digikala, Iran's high-tech e-commerce company. Following rigorous technical interviews, I was successfully admitted as a software engineer.

It was only the beginning; our team was gearing up to **launch a new application**, and numerous issues demanded attention. Swiftly mastering the technical aspects, I became the go-to person for promptly resolving bugs, earning the trust of everyone on the team. The most challenging part during this period involved **managing both university and work** responsibilities. While my colleagues took weekends off to relax, I dedicated myself fully to addressing my university projects. The result was remarkable, as I passed that semester with a GPA of 4. Through this experience, I discovered how my work could have an impact on a **large scale**, and I realized that **discipline** is the key to shaping my future.

[1] National Organization for Development of Exceptional Talents

Research

First Impressions At the age of 17, I had my first encounter with Artificial Intelligence through its magical ability to predict my next words while searching on Google. Upon further reading, I discovered that this capability is acquired by analyzing a set of internet searches. After participating in a webinar in the second semester of university, I realized that AI is not only used for Google services but has many other applications, like autonomous vehicles, medical image processing, voice assistants, and so on. Delving into AI and completing related courses, I became captivated by the extensive application of mathematics within this field. As previously mentioned, my passion for math knows no bounds, and AI was a migration for me from **pure mathematics to its applied aspect**.

Interests The **Information Retrieval** course plays a significant role in my research interests and the topic I am currently working on. Working with substantial amounts of data has always been intriguing to me. This course taught me how a minor optimization in algorithms can massively impact our retrieval speed and the relevance of documents retrieved in response to our queries. In addition, the Cloud Computing course expanded my knowledge about non-centralized and scalable data storage, which has fueled my interest in the **AutoML** field.

Besides, my experience at Digikala, a platform with over 10 million distinct products and 40 million users in a month, acquainted me with another related area, **Recommender Systems**. It was amazing to see the effect of this system on sales and the statistics provided by the business team. This was when I decided to choose recommender systems as my undergraduate project topic. My current research lies on ***Fairness in GNN-Based Recommender Systems*** within the DSLab at Amirkabir University. In this project, we are leveraging collaborative filtering techniques and incorporating a Graph Attention Network (GAT) while implementing modifications to attention functions and aggregation methods. We aim to develop an efficient and fair recommendation system that caters to users' preferences and interactions. To bring attention to less-visited items, commonly referred to as unpopular, we connect them with related popular ones. We then recommend these items to users and, based on their feedback, dynamically update our model. Alongside my knowledge of **Graph Neural Networks**, my research and teamwork skills increased during this close collaboration with the master's students.

Entering the world of graphs and the embedding vectors employed to store node information made me familiar with **Natural Language Processing**, where vocabulary information is likewise encoded into vectors. Moreover, the impressive capabilities of ChatGPT captured my attention, prompting me to delve into the Stanford CS224N courses to enhance my knowledge of NLP and LLMs. My recent projects in the NLP field have sparked a keen interest in conducting in-depth research on **question-answering systems** and **conversational recommender systems**.

Future

Objectives I have always aspired to contribute to cutting-edge **research and development (R&D)** teams within the world's largest and foremost companies. Research in the direction of large-scale applications is the goal I always strive to pursue. To make this a reality, I believe that it is essential to become a strong individual in both academic and professional aspects. The **collaboration between academic professionals and industry** at your university, along with the high level of courses taught, is why I am interested in continuing my journey with this program.