Statement of Purpose

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Introduction

I am Mohammad shahidzade, and I intend to pursue my dreams by joining The School of Computer and Communication Sciences of the École Polytechnique fédérale de Lausanne (EPFL). I am interested in machine learning and computer vision, especially with a concentration on performing deep learning on real-world applications. I am confident that my experiences throughout my three years of undergraduate studies at the Shahid Bahonar university have made me qualified to pursue these fields at EPFL, one of the world's most reputable universities.

Research Experience and Projects

In my first year of studies, I got the Bronze medal in the 2018 ICPC Asia Tehran regional contest. I achieved this award by following my study for the computer olympiad in high school. This award shows that I am a competitive programmer with a good knowledge of algorithms and data structure. I also enjoy solving problems and this was what motivated me to get this award. My interest in competitive programming did not stop and at the end of that year, I held a contest for hacker earth by writing the last three problems of the contest.

In my second year of studies, I won first place in problem C in the CAD contest at 2020 ICCAD. The CAD Contest at ICCAD is a challenging, multi-month, research and development competition. In this competition, I solved problem C by NVIDIA on developing a fast logic resimulation on GPU. In this project, I First write a compiler to convert the Verilog netlist to c++ functions. Then I developed a tool based on this paper [1] To parallelize it in 2 dimensions.

In addition to gaining great research experiences, I was fortunate that I could work under the supervision of professor Behnam Ghavami. This experience results in several papers and projects. Our research area was understanding the effect of fault on deep neural networks and neural networks optimization which results in BDFA [2], and another project on developing a full facial recognition system. I am also writing a new paper on the reliability enhancement of binarized neural networks. I believe these projects give me a great understanding of how CNN works and will help me to be successful at this summer internship.

Participation Reason

My passion for researching and solving real-world problems is the very reason that I want to participate in this internship. When I think about myself after this internship, I see myself as a B.Sc. student who had the chance to work with high-class professors on real-world

applications and took a huge step toward his goal of becoming a prominent researcher who finds solutions for challenges in science and engineering. I believe that participating in the EPFL summer internship is an essential factor for me to reach this goal.

The summer internship program at EPFL will help me reach my objective of becoming a well-educated engineer who is both ready to enter Ph.D. and MS. studies and aware of the industry and its unsolved problems. I am well aware that the ECE department at EPFL, thanks to its fabulous facilities and adept professors, can lay the foundations for students to reach their academic purposes. Among these skilled professors, I am willing to work with Prof. Alexandre Alahi. He is currently working on real-world applications such as Autonomous Driving. I believe that my background in deep learning and my willingness to solve problems have made me a suitable fit for working on these kinds of projects under his supervision. Also, I am interested in working with professors Amir Zamir,Alexander Mathis,Antoine Bosselut, and Martin Jaggi as I am highly interested in their research areas.

Concluding Remarks

I am confident that my studies and experiences have made me a potent and proper candidate for the EPFL summer internship program. I am looking forward to joining this program and making my academic ambitions come true.

Thank you for your time and consideration,

Mohammad shahidzade

References

[1] S. Holst, M. E. Imhof, and H.-J. Wunderlich, "High-Throughput Logic Timing Simulation on GPGPUs," ACM Trans. on Design Automation of Electronic Systems (TODAES), vol. 20, no. 3, pp. 1–22, Jun. 2015.

[2] Mani Sadati, Mohammad Shahidzade, Behnam Ghavami, Zhenman Fang, Lesley Shannon (2021). BDFA: A Blind Data Bit-flip Attack on Deep Neural Networks.