Seyed Mani Sadati

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Education

2018–Present **B.Sc. in Computer Engineering**, Shahid Bahonar University of Kerman.
Advisor: Professor Behnam Ghavami
Cumulative GPA: **19.0/20**

Research Interests

Deep Learning, Computer Aided Design, Dependable Systems

Papers

- **Seyed Mani Sadati**, Behnam Ghavami, Zhenman Fang, and Lesley Shannon. FitAct: Error Resilient Deep Neural Networks via Fine-Grained Post-Trainable Activation Functions. *Accepted in the 2022 Design, Automation & Test in Europe Conference & Exhibition (DATE).*
- **Seyed Mani Sadati**, Mohammad Shahidzade , Behnam Ghavami, Zhenman Fang, and Lesley Shannon. BDFA: A Blind Data-Free Attack on Deep Neural Networks. *Under Construction.*

Honors & Awards

2020 **First Place**, CAD Contest at ICCAD 2020
Winner team of GPU Accelerated Logic Re-simulation (Problem C).

2018/19 **Bronze Medal**, ICPC Asia Tehran Regional Contest
Rank 4 in the 2018 ICPC Asia Tehran Regional Contest. Rank 1 in Asia Tehran Online Programming Contest.

2018–Present **Ranked Second GPA**, Shahid Bahonar University
Among 120 computer engineering students.

2018 **Received full Scholarship**, for Bachelors degree (Tuition waiver), Shahid Bahonar University of Kerman.

2016, 2017 **Top 70**, National Olympiad in Informatics
Among 10000 high school students, passed first and second exam.

Skills

- **Programming Languages:**
  C/C++ {CUDA, STL, GNU toolchain (gcc, g++, make, gdb, valgrind), cmake}, Python, C#, MATLAB (Octave), Verilog, VHDL, R.
- **Machine Learning Frameworks:**
  Pytorch, NumPy, Pandas, scikit-learn, matplotlib, Tensorflow, Keras, NLTK.
- **Hardwares and Simulators:**
  Raspberry PI, STM32, Hspice, ModelSim, Proteus, Xilinx ISE Design Suite.
- **Others:**
  Linux, Git, Docker, Conda, LaTeX.

Research Collaborations

Reconfigurable Computing LAB, ***Simon Fraser University***, BC, Canada
Collaboration on reliability and security of Deep Learning models against fault injection and bit-flip attacks.
http://www2.ensc.sfu.ca/ lshannon/rcl/

Research Experiences

2021–Present **Research Assistant**, Shahid Bahonar University of Kerman
Reliable Embedded System Design Laboratory

Supervisor: Professor Behnam Ghavami

Description: I contributed to 6 projects related to Deep Learning, efficient and low-cost Deep learning systems, Safety and reliability of DNNs, and logic simulations.

Selected Research Projects

- **Fault injection on Deep learning models**
  I designed a new method to improve the error resiliency of DNNs. I proposed a new bounded and trainable activation function to enhance the resiliency of the network. I tested this method on several DNN architectures and datasets.
- **Blind Data-Free Attack**
  I deployed several approaches to attack DNN parameters without having access to any training/test data. On of these methods was able to decrease the accuracy of ResNet50 to 12% on the CIFAR100 dataset.
- **GPU Acclerated Logic re-simulation**
  I developed several methods to parallelize the computations in the two dimensions of gate-parallelism and stimuli-parallelism and a new method for memory management of the stored signal waveforms. Also, I deployed a Verilog parser, as well as a Verilog to C++ translator.
- **Full Facial Recognition System**
  I developed a Full Facial Recognition system that consumes negligible power and memory compared to other big DNNs. It first detects people's faces in the picture. After properly aligning the faces, I used a face recognition model to recognize the identity of the faces.

Other Experiences

2019 **Computer Olympiad Teacher**, Allame Helli High School
I prepared students for the Iranian National Olympiad in Informatics. I taught Algorithms, Programming, and Graph theories.

2019 **Scientific Team Member**, Saba Programming Contest
An onsite and online programming contest. I designed several problems for the competition, prepared the problem statements, and tested the solutions. The Online contest was held at HackerEarth.

Selected Courses and GPAs

- Algorithm Design: 20/20
- Operating Systems: 19.5/20
- Digital Electronics: 20/20
- Engineering Statistics and Probability: 20/20
- Fundamentals of Computational Intelligence: 20/20
- Artificial Intelligence: 18/20
- Compiler Design: 20/20
- Engineering Mathematics: 18/20
- Computer Design of Digital Circuits: 20/20

Selected Online Courses

- Machine Learning Offered By Stanford University
- Reinforcement Learning Offered By University of Alberta

References

- **Associate Professor Behnam Ghavami**
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  Shahid Bahonr University of Kerman
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