

Sina Mahdipour Saravani

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INTERESTS & EXPERTISE	<ul style="list-style-type: none">• Efficient and High-Performance Deep Learning• Distributed/Multi-GPU Deep Learning and Natural Language Processing (NLP)	
EDUCATION	<p>University of Utah, Salt Lake City, United States</p> <ul style="list-style-type: none">• Ph.D., Computer Science, In Progress, GPA: 4.0/4.0 2022 - Present<ul style="list-style-type: none">◊ Courses are finished. Research is focused on Efficient and High-Performance Deep Learning. <p>Colorado State University, Fort Collins, United States</p> <ul style="list-style-type: none">• M.S., Computer Science, GPA: 4.0/4.0 2020 - 2022<ul style="list-style-type: none">◊ Thesis: <i>Redundant Complexity in Deep Learning: An Efficacy Analysis of NeXtVLAD in NLP</i> <p>Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran</p> <ul style="list-style-type: none">• B.Sc., Computer Engineering, GPA: 16.61/20.0 2014 - 2019<ul style="list-style-type: none">◊ Thesis: <i>Implementation of FPGA Accelerators for Convolutional and Pooling Layers of a Convolutional Neural Network (CNN)</i>	
PUBLICATIONS & MANUSCRIPTS	Google Scholar Link:	https://scholar.google.com/citations?user=-32Of8AAAAJ&hl=en
	<ul style="list-style-type: none">• [Under Review] Accelerated Auto-tuning of GPU Kernels for Tensor Computations. <i>ICS 2024</i>. Chendi Li*, Yufan Xu*, Sina Mahdipour Saravani, Saday Sadayappan• [Under Review] Empirical Analysis of Matrix Factorization Methods for Pre-trained Transformers. <i>NAACL 2024</i>. Ashim Gupta, Sina Mahdipour Saravani, Saday Sadayappan, Vivek Srikumar• An Investigation into the Contribution of Locally Aggregated Descriptors to Figurative Language Identification. 2021. <i>EMNLP 2021 Workshop</i>. Sina Mahdipour Saravani, Ritwik Banerjee, and Indrakshi Ray• Automated Identification of Social Media Bots using Deepfake Text Detection. <i>ICISS 2021</i>. Sina Mahdipour Saravani, Indrajit Ray, and Indrakshi Ray• A Generalized Method for Automated Multilingual Loanword Detection. <i>COLING 2022</i>. A. Nath*, Sina Mahdipour Saravani*, I. Khebour, S. Mannan, Z. Li, and N. Krishnaswamy.• Automated Code Extraction from Discussion Board Text Dataset. <i>ICQE 2022</i>. Sina Mahdipour Saravani, Sadaf Ghaffari, Yanye Luther, James Folkestad, and Marcia Moraes.	
RESEARCH & WORK EXPERIENCES	<ul style="list-style-type: none">• Research Assistant, University of Utah, USA 2022 - Present<ul style="list-style-type: none">★ Supervisor: Dr. Saday Sadayappan◊ Fast Auto-tuning for Matmul and Convolution GPU Kernels for Deep Learning Worked on designing a coordinate descent search algorithm for fast auto-tuning with proxy performance modeling.◊ Snake-Pattern Development of Multiple Matmul Blocks in Cerebras CS-2 Chip Developed in Cerebras SDK language and achieved performance improvements compared to SUMA in simulations.◊ Low-Rank Factorization Methods for Distributed Large Language Models (LLMs) Empirically evaluated low-rank factorization methods and investigated the effect of Monarch matrices compared to simple SVD.• Research Assistant, Colorado State University, USA 2020 - 2022<ul style="list-style-type: none">★ Supervisors: Dr. Ritwik Banerjee, Dr. Indrakshi Ray, Dr. Nikhil Krishnaswamy◊ Machine Translation for Similar Low-Resource Language Pairs with Loan Words Studied the potential benefits of using loan words, both as a knowledge base and as insights to architecture design, for automated machine translation between similar language pairs.	

	<ul style="list-style-type: none"> ◇ An Investigation into the Contribution of VLAD to Figurative Language Identification Investigated the application and effectiveness of vector of locally aggregated descriptors on top of Transformer layers. Studied sarcasm detection in Twitter as a use case. ◇ Deepfake Text Detection for Social Media Bot Identification Implemented Transformer-based models to detect bot-generated text on a deepfake dataset resulting in performance improvements by using domain-specific pre-trained models. ◇ Automated Code Extraction from Discussion Board Text Dataset Developed algorithms to extract topic codes from course discussion datasets. 	
	<ul style="list-style-type: none"> ● Research Assistant, Amirkabir University of Technology, Iran 2018 - 2019 <ul style="list-style-type: none"> ★ <i>Supervisor:</i> Dr. Reza Safabakhsh ◇ FPGA Accelerators for Convolutional and Pooling Layers of a CNN Researched and implemented an FPGA accelerator for the convolutional and max pooling functions of CNNs using High-Level Synthesis. It was deployed on a ZYBO SoC board and achieved up to 30× speedup compared to the equivalent software code on a CPU. ● NLP R&D Intern, CommentMiner, Iran 2017 - 2018 <ul style="list-style-type: none"> ★ <i>Supervisor:</i> Mr. Ahmad Asadi ◇ NLP Microservices for the Persian Language Implemented text-processing microservices (topic classification, profanity detection, NER, and sentiment analysis) and a question-answering chat bot for the Persian language. 	
TEACHING & MENTORING EXPERIENCES	<ul style="list-style-type: none"> ● Temporary Teaching Faculty, University of Nevada, Las Vegas Summer 2020 <ul style="list-style-type: none"> ◇ Computer Science II (CS 202) course, Primary Instructor ● Teaching Assistant <ul style="list-style-type: none"> ◇ Fault-Tolerant Computing (CS 530) course, Colorado State University Spring 2022 ◇ Data Mining (CS 458/658) course, University of Nevada, Las Vegas Spring 2020 ◇ Embedded & Real-Time Systems course, Amirkabir University of Technology Fall 2018 ● Mentor, Colorado State University 2020 - 2021 <ul style="list-style-type: none"> ◇ Mentored 2 graduate, 5 undergraduate and 2 high school students for research in NLP. ◇ Mentored a 1st generation low-income underrepresented student for i-STEM Scholars program. 	
PROFESSIONAL SERVICES	<ul style="list-style-type: none"> ● Reviewer for the following conferences: <ul style="list-style-type: none"> ◇ LREC-COLING 2023 ◇ ICDCS 2021 ◇ IEEE TPS 2021 & 2020 ◇ WebConf 2021 & 2022 ◇ ACISP 2021 ◇ IEEE S&P 2020 ◇ ICQE 2022 ● Industry Relations Officer, Scientific Association and Olympiad Affairs Office of AUT 2015 	
HONORS & AWARDS	<ul style="list-style-type: none"> ● Entering Ph.D. Student Fellowship, University of Utah 2022 ● Fully-funded Research Assistantship, Colorado State University 2020 ● UNLV Access Grant, University of Nevada, Las Vegas 2020 ● Fully-funded Graduate Assistantship, University of Nevada, Las Vegas 2019 ● Top 50 start-ups in GITEX start-ups competition, UAE (CommentMiner) 2017 ● 3rd place in ElecomStars start-ups competition, Iran (CommentMiner) 2017 ● 1st place grant in Sharif VC Cup start-ups competition, Iran (CommentMiner) 2017 ● Ranked top 0.2% in Nationwide University Entrance Exam in Math. & Physics, Iran 2014 	
RELEVANT SKILLS	<ul style="list-style-type: none"> ● PROGRAMMING: Python, C/C++, Java, C# ● TOOLS AND FRAMEWORKS: PyTorch, DeepSpeed, HuggingFace Transformers, TensorFlow, spaCy, scikit-learn, MALLET, Stanford NLP, polyglot, NLTK, OpenMP, CUDA, Docker ● OTHERS: \LaTeX, Bash, Vivado and Hardware Design Softwares, Basic Web Programming 	