

Ramin Akbari

MI - Ann Arbor

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EDUCATION

Michigan State University <i>Ph.D. in Computer Science</i>	<i>Advisor: Vishnu Boddeti</i>	Jan 2023 – Current East Lansing, USA
Sharif University of Technology <i>M.Sc. in Structural Engineering</i>	<i>Advisor: Amir Reza Khoei</i>	Sep 2014 – Jan 2017 Tehran, Iran
University of Tehran <i>B.Sc. in Civil and Environmental Engineering</i>		Sep 2008 – Aug 2013 Tehran, Iran

RESEARCH EXPERIENCE

Sartorius <i>Research Intern - Manager : Dr. Paul Kesselman</i>	Ann Arbor, MI Aug 2024 – Current
- Developed a ML pipeline to quantify cell viability from label-free bright-field images - Developed and optimized ML pipelines for robust and efficient cell segmentation. - Developed statistical techniques to isolate true signals from in vitro Raman spectroscopy.	
Michigan State University <i>Ph.D. Researcher - Advisor: Dr. Vishnu Boddeti</i>	East Lansing, USA Jan 2023 – Current
- Developed statistical methods for nonlinear concept erasure in pretrained language models. - Designed a learning scheme for biometric template fusion and matching under homomorphic encryption. - Developed an invariant representation learning approach for federated learning.	
Michigan State University <i>Graduate Researcher - Advisor: Dr. Roozbeh Dargazany</i>	East Lansing, USA Jan 2020 – 2022
Developed physical-based and data-driven models for rubber-like elasticity	
Sharif University of Technology <i>Graduate Researcher - Advisor: Dr. Amir Reza Khoei</i>	Tehran, Iran Jan 2015 – Feb 2018
- Investigated numerical stabilization methods for contact mechanics in X-FEM. - Developed a computational homogenization scheme for thermo-mechanical contact (Kapitza Resistance).	

SELECTED PUBLICATIONS

- Obliviator Reveals The Cost of Nonlinear Guardedness in Concept Erasure**
Ramin Akbari^{*}, Milad Afshari^{*}, Vishnu Naresh Boddeti
The Thirty-Ninth Annual Conference on Neural Information Processing Systems, 2025.
- Homomorphically Encrypted Biometric Template Fusion and Matching**
Ramin Akbari^{*}, Luke Sperling^{*}, Nalini Ratha, Arun Ross, Vishnu Naresh Boddeti
IEEE Transactions on Biometrics, Behavior, and Identity Science, 2025.
- Extending The Theory of Pseudo-Elasticity to Capture The Permanent Set and the Induced Anisotropy in the Mullins Effect**
Afshin Anssari-Benam, Ramin Akbari, Roozbeh Dargazany
International Journal of Non-Linear Mechanics, 2023
- A Knowledge-driven Physics-Informed Neural Network model; Pyrolysis and Ablation of Polymers**
Aref Ghaderi, Ramin Akbari, Yang Chen, Roozbeh Dargazany (arXiv, 2022)
- Reverse Physically Motivated Frameworks For Investigation Of Strain Energy Function in Rubber-like Elasticity**
Ramin Akbari, Vahid Morovati, Roozbeh Dargazany
International Journal Of Mechanical Sciences (2022)
- A Computational Homogenization Method for Modeling the Kapitza Thermal Resistance in Heterogeneous Materials**
Ramin Akbari and A.R. Khoei
10th National Congress on Civil Engineering, Iran, 2017.

SELECTED ACADEMIC PROJECTS

MLP From Scratch in C++ with Nesterov momentum (C++, CUDA, OpenMP, MPI)

- Developed neural network in C++ from scratch, accelerating matrix operations with a custom OpenMP library and scaling the training process across distributed nodes with MPI.

Accelerating a Mesh-Less Solver (FORTRAN)

- Implemented a parallel sparse scheme for stiffness matrix assembling and linked a direct parallel sparse solver (PARDISO - Intel MKL) to the code.

Multi-Scale Thermo-Mechanical Contact (COMSOL + MATLAB + C)

- Solved a finite deformation problem using COMSOL to extract a pressure-conductance relation, which was then used within a custom code to simulate a thermo-mechanical (Kapitza resistance) contact problem.

Contact-Plasticity with Quadratic Convergence (MATLAB + C)

- This program uses a backward Euler return to the yield surface and utilizes a damped Newton-Raphson approach to improve the convergence rate of a coupled contact-plasticity problem.

TEACHING EXPERIENCE

University of Tehran

HPC with C/ Fortran (OpenMP, MPI, Intel MKL)

Aug 2017 - Sep 2017

Tehran, Iran

Serie-Omran Institute (Tutor)

Structural analysis, Strength of Material, Calculus I-II-III

Jan 2017 - Feb 2019

Tehran, Iran

Michigan State University

Teaching Assistant

Jan 2021 – Current

East Lansing, USA

Courses: Intro to Engineering Modeling, Computational Foundation of AI, Introduction to AI, Introduction to Programming (Python)

TECHNICAL SKILLS

Programming Languages: Python, C++, C, Fortran, MATLAB, Shell-Script

ML Frameworks: Pytorch, JAX, Scikit Learn, Pandas, Numpy, Scipy

Parallel Frameworks: Cuda C, OpenMP, MPI, Pthreads

Software: COMSOL Multi-Physics, Mathematica

SELECTED ACADEMIC COURSES

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| • Deep Learning | • Machine Learning | • Computer Vision |
| • Design and Theory of Algorithm | • Object-oriented Software Design | • Parallel Computing |
| • Finite Element Analysis | • Advanced Finite Element Analysis | • Continuum Mechanics |
| • Advanced Engineering Mathematics | • Theory of Vibration | |