Hossein Fathollahian

PhD Student, Department of Computer Science, College of Engineering
University of Illinois Chicago
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Summary/Objective

Passionate about Data science and engineering, specializing in machine learning, computer vision, and data visualization. Focused on developing algorithms to enhance high-dimensional Data analysis and optimize data-driven decision-making in complex visual data.
• Software/Web Development • Data Science/Visualization • Computer Vision • Machine Learning

Skills

Programming Languages:
Python, C++, MATLAB, JavaScript, TypeScript, PowerShell, SQL

Frameworks and Libraries:
PyTorch, TensorFlow, Keras, OpenCV, Pillow
Pandas, NumPy, SciPy, scikit-learn, Dask
Seaborn, Matplotlib, Plotly

Developer Tools:
IDE (Visual Studio, PyCharm), Virtualization (Docker, Kubernetes)
WebDev (Flask, D3.js, Three.js, React, Next.js, Node.js, Observable)
Game Development and version control:
Unity, Unreal Engine

Experience

Summer 2025
Researcher

University of Illinois Chicago (EVL)-Argonne National Laboratory Chicago, IL

SAGE Project (Prof. Michael E. Papka)
Contribution: Contributed to the NSF-funded SAGE project in collaboration with Argonne National Laboratory. Developed AI pipelines for sensor data using NVIDIA Jetson edge devices. Focused on real-time data integration and deployment of ML models.

Jan. 2024 - Jun. 2025
(Research Assistant)

University of Illinois Chicago - Graduate Research Assistant Chicago, IL

• **BI-LAVA: A Visual Analytics and Active Learning System for Biomedical Image Taxonomies.**
Contribution: Developed a Computer vision caption finding and Frontend upgrading.
Tools: Web development, Database, Machine Learning.

• **Camera Best View Positioning for Multidimensional Biomedical Imaging**.
Contribution: Propose and conduct new Algorithm based on 3D Gaussian splatting.
Tools: MATLAB, Python, Deep-Learning, MongoDB.

• **Early stage Axillary Lymph node detection in mammography image**.
Contribution: Leveraging radiomics extraction instead of only segmentation for improving machine learning efficiency .
Tools: MATLAB, Python, Deep Learning, data labeling.

Jan. 2024 - Present
(Teaching Assistant)

University of Illinois, Chicago- Graduate Teaching Assistant Chicago, IL

CS211: Computer Programming practicum (Prof. Scott Reckinger)
CS141: C++ programming (Prof. Mark Hodges)
Duties: Led lab sessions, provided coding assistance, held office hours, graded assignments and exams, and facilitated discussions to reinforce programming concepts and support student learning.

Education

Jan 2024- Expected Sep 2028 GPA=4.0

PhD. in Computer Science:
(Visual Computing - Computer Vision - AI/ML)
Chicago, IL, USA
University of Illinois Chicago (UIC)
Advised by Professor Georgeta-Elisabeta Marai
Research area: My research explores visual computing and AI, leveraging deep learning to analyze complex data. I focus on medical diagnostics, predictive modelling, and biomarker discovery to enhance healthcare innovation.

Graduated GPA=3.8/4.0

MSc. in Telecommunication Engineering:
(Digital Image and Video Processing)
Tehran, Iran
Shahid Beheshti University of Tehran (SBU)
Advised by Professor Farah Torkamani-Azar
Thesis title: Video Compression and Quality Assessment Using Singular Value Decomposition (SVD) for Applications in Computer Vision.

2023-2025

Relevant Coursework:
Algorithm, Data Structure
Artificial Intelligence, Machine Learning, Advanced Natural Language Processing
Advanced Computer Vision, Visual Data Science, Computer Graphics, Human-Computer Interaction(HCI)

Selected Projects

Fall 2024

Deep Learning-Based Denoising of Medical Chest X-Rays web application
Developed a web app with deep learning (U-Net, GAN, Autoencoder) to denoise and visualize chest X-rays.

Fall 2024

Interactive 3D Visualization of U.S. Crime Rates Web Application
Developed a 3D web app to visualize U.S. crime data using JavaScript, React, D3.js, and Three.js.

Spring 2024

3D MAZE (Video Game - Unity 3D)
3D Unity game where players navigate a dynamic maze across six cube sides using movement and memory.

Awards & Honours

2022

R&D leadership at MENIC Co
Awarded for innovation in company productions and outstanding contributions.

2021

Telecoms Systems Design at MENIC Co
Recognized and Awarded for leadership and contributions to innovative system designs.

Publications

J: journal, C: conference/symposium, W: workshop , IP: In Progress

[IP] 2025 ”Leveraging Large Language Models for Enhanced Interpretation of Data Visualizations”
Hossein Fathollahian, G. Elisabeta Marai,

[IP] 2025 ”Optimizing Camera Positioning for 3D Microscopy Imaging and Multidimensional Data Rendering: An Advanced Computer Vision Approach”, **Hossein Fathollahian**, G. Elisabeta Marai,

[J] 2015 ”Video quality measurement based on 3-D Singular value decomposition”.*Journal of Visual Communication and Image Representation.* Farah Torkamani-Azar, Hassan Imani, **Hossein Fathollahian** (Volume 27, February 2015, Pages 1-6)