Peyman Kassani

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Professional Summary | Senior researcher | 10+ Years in Computer Vision & Generative AI

PhD-trained expert specializing in deploying scalable deep learning systems for healthcare and biomedical applications. Proven success in leading AI projects for medical imaging, multi-modal data (genomic + imaging), and embedded systems. Core expertise includes CNNs, VAEs, Denoising Diffusion models, Neural ODEs, Self-Supervised Learning, Model Quantization, Explainable AI (XAI), Multi Modal Learning, Video/Image Processing, Augmented Reality, and LLM/CV integration. Published innovator with 15+ papers in top journals (Nature, IEEE, MICCAI) and experience securing NIH grants.

Key Skills

- **AI/ML Focus:** Computer Vision, Generative AI (VAEs, GANs), LLMs, Self-Supervised Learning, Multi-Modal Systems, Explainable AI (XAI), Diffusion Models
- **Technical Stack:** Python, PyTorch, TensorFlow, OpenCV, AWS SageMaker, Docker, Kubernetes, Postgres, Linux
- **Domain Expertise:** Medical Imaging, Pharmaceutical Applications (Neonatal/Pediatric Monitoring), Embedded Systems
- **Leadership:** Mentorship, NIH Grant Writing, Cross-Functional Collaboration

Professional Experience

Senior Researcher (AI/ML)
Children's Hospital of Orange County (CHOC), Irvine, CA | **2022–Present**

- **Led end-to-end development** of self-supervised CV pipelines for pediatric disease detection, reducing manual annotation costs via custom SSM and CNN-Transformer frameworks.
- **Deployed Docker/Kubernetes-based segmentation models** for MRI analysis, improving diagnostic accuracy by **25%** in neonatal care (aligns with pharmaceutical imaging needs).
- **Spearheaded NIH grant proposals** The R21 grant for AI-driven craniofacial cleft lip is under review.
- **Cleft lip automated annotation tool** provided a Windows based, Web application (under construction) for physicians at CHOC and UCI

Consultant (AI Systems Optimization)
Rekovar Inc., Lake Forest, CA | **2024–Present**

- **Optimized CNN models (TensorRT)** for embedded neonatal sensors,
- **Quantize AI models (TFLite)** for embedded devices
- **Advised on research grants** for the future research direction

Research Bioinformatician II
Cedars-Sinai Medical Center, Los Angeles, CA | **2022–2023**

- **Designed explainable VAE frameworks** for spatial transcriptomics,
- **Architected PyTorch-based WSI analysis pipeline**, reducing processing time from hours to minutes for large-scale biomedical datasets.

Postdoctoral Researcher (AI Innovation)
Stanford University School of Medicine | **2020–2022**

- Enabling causal variant discovery in Alzheimer's research (*Nature Machine Intelligence 2022*).

Postdoctoral Researcher (AI Innovation)
Tulane University School of Medicine | **2018–2020**

- Developed multi-modal models and causal modeling integrating brain imaging + genomic data (*IEEE TMI 2020*).

Education

Postdoctoral Researcher, *Stanford University, School of Medicine, Stanford, CA,* ***2020 – 2022***
Postdoctoral Researcher, *Tulane University, New Orleans, LA,* ***2018 – 2020***
Ph.D. in Electrical Engineering (computer vision), *Yonsei University, Seoul, South Korea,* ***2013 – 2018***
M.Sc. in Computer Science, *Kharazmi University, Tehran, Iran,* ***2010 – 2013***
B.Sc. in Applied Mathematics, *Basic Sciences University, Guilan, Iran,* ***2004– 2008***

Awards

2013~2018 Among top students of Electrical Engineering Department, Yonsei University.

2015 ICCAS 2015, Best Student Paper Award, Busan, South Korea.

2013 ~ 2017 Granted 4 years Scholarship (Outstanding Foreign Student), Yonsei University.

2011~2013 Among top students of Computer Science Department, Kharazmi University.

Technical Leadership & Innovation

- **Generative AI:** Pioneered ML/CNN frameworks for generative data augmentation.
- **Model Optimization:** Reduced SVM training time by **90%** via approximate violation constraint minimization (*IEEE TPAMI 2025 – Under Review*).
- **Mentorship:** Trained 5 junior researchers in CV/ML best practices at CHOC and UCI.

Selected Papers

MICCAI 2025 (Submitted) **H. Kassani**, **P.**, et. al, "Dual Attention Mechanism in Pixel Grouping for Patent Ductus Arteriosus Prediction"

IEEE TPAMI 2025 (Under Review) **H. Kassani**, **P.**, "Self-Adaptive Bi-Directional Scaling Factors for High Dimensional Support Vector Machines"

ICCV 2025 (Will be submitted) **H. Kassani**, **P.**, "Introducing a New Optimizer with Recurrent Momentum and Adaptive Learning Rate Adjustment"

NeurIPS 2025 (Will be submitted) **H. Kassani**, **P.**, "Accelerating SVM Training with Leveraging Linear Programming and Mini-Batch SGD"

Nature Pediatric Research 2023 **H. Kassani**, **P.**, Emheurepha, L, Martin-King, C., Gibbs, M, "Developing explainable deep neural networks for juvenile dermatomyositis prediction through nailfold images"

Nature Machine Intelligence 2022 **H. Kassani**, **P.**, Lu, F., Guen, Y.L., He, Z., "Deep neural networks with

	controlled variable selection for the identification of putative causal genetic variants"
Applied Soft Computing 2021	H. Kassani, S., Rismanchina, F., **H. Kassani**, **P.**, "*k*-relevance vectors: Considering relevancy beside nearness"
IEEE TMI 2020	**H. Kassani**, **P.**, Li, X., Zhang, G., Wang, Y. P., "Causality based Feature Fusion for Brain Neuro-Developmental Analysis"
IEEE TMI 2020	Li, X., Wang, J., **H. Kassani**, **P.**, Zhang, Y., Bai, Y., Calhoun, V. D., Wang, Y. P., "Multi-Hypergraph Learning Based Brain Functional Connectivity Analysis in fMRI Data"
SPIE Medical Imaging 2020	**H. Kassani**, **P.**, et. al, "Reduced sine hyperbolic polynomial model for brain neuro-developmental analysis",
Neurocomputing 2018	**H. Kassani**, **P.**, Teoh, A. B. J., Kim, E., "Sparse Pseudoinverse Incremental Extreme Learning Machine,"
Applied Soft Computing 2017	**H. Kassani**, **P.**, Teoh, A. B. J., "A new sparse model for traffic sign classification using soft histogram of oriented gradients"
ICCAS 2015	**H. Kassani**, **P.**, Hyun, J., Kim, E., "Proposing a GPU Based Modified Fuzzy Nearest Neighbor Rule for Traffic Sign Detection,"

Relevant courses

Explainable Deep Learning, Support Vector Machines, Granger Causality, Digital Image Processing, Special Topics in Pattern Recognition, Statistical Pattern Recognition, Neural Networks, Special Topics in Biometrics, Linear Algebra, Graph Theory, Convex Optimization

References

Available on request