Negar Kamali

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RESEARCH INTERESTS

• Trustworthy AI • AI-Assisted Decision Making • Interpretable AI • Human & Generative AI Collaboration

EDUCATION

Ph.D. in Computer Science *2022-present* Northwestern University
Evanston, IL, USA

Ph.D. in Computational Mechanics *2013-2018* University of Illinois at Chicago
Chicago, IL, USA

M. Sc. in Computational Mechanics *2010-2013* University of Tehran
Tehran, Iran

B.Sc. in Civil Engineering *2006-2010* Tabriz University
Tabriz, Iran

HONORS & AWARDS

Northwestern University | *Cognitive Science Advanced Research Fellowship* 2024

Northwestern University | *ACM CHI Best Paper Honorable Mention* 2024

Northwestern University | *Todd M. and Ruth Warren and the Chookaszian Family Fellowship* 2022 & 2023

Univ. of Illinois, Chicago | *Chancellor's Student Service and Leadership Award* 2017

Univ. of Illinois, Chicago | *Excellence in Undergraduate Mentoring Scholarship* 2017

Univ. of Illinois, Chicago | *Chicago Consular Corps of Engineers Scholarship* 2017

Univ. of Illinois, Chicago | *UIC Presenter Award* 2016

Univ. of Illinois, Chicago | *Graduate Student Council UIC Award* 2016

PUBLICATIONS, PRESENTATIONS, AND PRESS

Working Papers

- *Enhancing Human Detection of Deepfakes with LLM and Expert Guidance*
  - **Related ACM CHI Paper:**
    "Characterizing Photorealism and Artifacts in Diffusion Model-Generated Images" **N. Kamali**, K. Nakamura, A. Kumar, A. Chatzimparmpas, J. Hullman, M. Groh *ACM CHI Conference on Human Factors in Computing Systems*, Yokohama, Japan, 2025
  - **Related Preprint:**
    "How to Distinguish AI-Generated Images from Authentic Photographs" **N. Kamali**, K. Nakamura, A. Chatzimparmpas, J. Hullman, M. Groh Available on *arXiv*, 2024

Conference Proceedings

- "Characterizing Photorealism and Artifacts in Diffusion Model-Generated Images", **N. Kamali**, K. Nakamura, A. Kumar, A. Chatzimparmpas, J. Hullman, M. Groh *ACM CHI Conference on Human Factors in Computing Systems, Yokohama, Japan,* 2025
- "Patients' Expectations of ML-driven JITAI Support for Maternal Stress Management", M. Ulloa, **N. Kamali**, G. Fernandes, E. Soyemi, M. Beltzer, N. Alshurafa, M. Jacobs, *Under review for ACM Transactions on Computing for Healthcare,* 2025

- "Evaluating the Utility of Conformal Prediction Sets for AI-Advised Image Labeling", D. Zhang, A. Chatzimparmpas, **N. Kamali**, J. Hullman, *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems,* 2024
  - Best Paper Honorable Mention Award

Invited Talks & Panels

- **AI and Disinformation Summit** (Panelist, By Invitation), *Center for Informed Democracy and Social Cybersecurity, Carnegie Mellon University, Pittsburgh, PA, January 2025.*
- **Laboratory for Analytical Science 2024 Research Symposium** (Invited Speaker), *North Carolina State University, Raleigh, NC, December 2024.*

Poster Presentation

- "Evaluating Human Perception of AI-Generated Images", **N. Kamali**, A. Chatzimparmpas, J. Hullman, M. Groh, *IC2S2, Philadelphia,* 2024
- "Co-Designing Patient-Facing Machine Learning for Prenatal Stress Reduction", M. Ulloa, **N. Kamali**, G. Fernandes, E. Soyemi, M. Beltzer, B. Kaveladze, N. Alshurafa, M. Jacobs, *ISRII, Ireland,* 2024
- "Evaluating the Utility of Conformal Prediction Sets for AI-Advised Image Labeling", D. Zhang, A. Chatzimparmpas, **N. Kamali**, J. Hullman, *Human+AI Symposium at the University of Chicago,* 2023

Workshops

- "Co-Designing Patient-Facing Machine Learning for Prenatal Stress Reduction", M. Ulloa, **N. Kamali**, G. Fernandes, E. Soyemi, M. Beltzer, B. Kaveladze, N. Alshurafa, M. Jacobs, *Lightning talk presented at the CRA-WP IDEALS Conference, Minneapolis, MN,* 2024
- "Co-Designing Patient-Facing Machine Learning for Prenatal Stress Reduction", M. Ulloa, **N. Kamali**, G. Fernandes, E. Soyemi, M. Beltzer, B. Kaveladze, N. Alshurafa, M. Jacobs, *Workshop presentation at the 2024 CSCW Conference on Computer-Supported Cooperative Work and Social Computing, Minneapolis, MN,* 2024
- "Patient-facing Machine Learning for Prenatal Stress Reduction in the United States: A Co-design Toolkit", M. Ulloa, **N. Kamali**, G. Fernandes, E. Soyemi, M. Beltzer, N. G. Menon, N. Alshurafa, M. Jacobs, *Presented at CSCW '23 workshop "Supporting User Engagement in Testing, Auditing, and Contesting AI",* 2023

Journal Publications

- "Harmonic-enriched reproducing kernel approximation for highly oscillatory differential equations", A. Mahdavi, Sh. W. Chi, **N. Kamali**, *ASCE's Journal of Engineering Mechanics,* 2020
- "Influence of Mesoscale and Macroscale Heterogeneities in Higher Harmonics Under Plastic Deformation", **N. Kamali**, N. Tehrani, A. Mostavi, Sh. W. Chi, D. Ozevin, J.E. Indecochea, *Journal of Non-destructive Evaluation,* 2019
- "Numerical study on how heterogeneity affects ultrasound higher harmonics generation", **N. Kamali**,A. Mahdavi, Sh. W. Chi, *Nondestructive Testing and Evaluating,* 2019
- "Wavelet Based Harmonics Decomposition of Ultrasonic Signal in Assessment of Plastic Strain in Aluminium", A. Mostavi, **N. Kamali**, N. Tehrani, Sh. W. Chi *Nondestructive Testing and Evaluating,* 2018

Media Coverage

- *New Scientist:* How to Avoid Being Fooled by AI-Generated Misinformation
- *Kellogg Insight:* Can You Tell if These Photos Are AI-Generated?
- *Mashable:* How to identify AI-generated videos
- *Kellogg Insight:* When Put to the Test, Are We Any Good at Spotting AI Fakes?
- *Technology Magazine:* Does Google's Veo 3 Do Enough to Distinguish AI and Reality?

Doctoral Thesis | Enriched Numerical Method for Wave Propagation and Assessing Material Damage Using Nonlinear Acoustics, ***Negar Kamali****, University of Illinois at Chicago,* 2018

ACADEMIC EXPERIENCE

Northwestern University | *Research Assistant at Human-AI Collaboration Lab* September 2022 - Present

Project: Enhancing Human Detection of AI-generated Media

- Designed and led large-scale digital experiments to understand and improve human detection of AI-generated and real media, using methods from HCI, cognitive science, and behavioral research.
- Built, curated, and analyzed multi-modal datasets (images and videos; >2,000 items), using Generative AI tools including Google Veo, MidJourney, Adobe Firefly, and Stable Diffusion.
- Developed interactive web-based experimental platforms and prototypes for testing just-in-time LLM and expert interventions in human decision-making tasks.
- Explored the impact of generative models and narrative-driven content on human perception, scenario understanding, and trust in multimedia environments.
- Investigated factors affecting detection accuracy, including scene complexity, artifacts, display time of an image, and human curation on perceptual judgments.
- Collaborated with interdisciplinary teams (AI, HCI, media science, psychology) and engaged with external partners to evaluate interventions for trustworthy, human-centered AI in real-world scenarios.
- Published results at top-tier venues and contributed to open-source tools and data for advancing research in trustworthy, generative, and realistic media AI.

Project: Conformal Prediction Set Utility Evaluation

- Explored conformal prediction sets as a method for generating valid confidence sets in distribution-free uncertainty quantification.
- Conducted a thematic analysis on perceptions of AI assistance during an experiment where participants labeled in-distribution and out-of-distribution images.

Project: Co-design Patient-Facing Machine Learning Strategies for Prenatal Stress Reduction

- Investigated preferred interactions of pregnant people with next-day machine learning stress predictions along with preferred explanations, and recommendations
- Directed various participatory design sessions catering to a diverse group
- Crafted co-design approaches for effective virtual engagement with research participants
- Devised a prototype for the patient-oriented Decision Support Tool (DST) showcasing different facets of machine learning including predictions, explanations, bias, uncertainty, risk, and stress management recommendations
- Collaborated with the Center for Advancing Safety of Machine Intelligence (CASMI)

Univ. of Illinois at Chicago | *Research Assistant* 2013-2018

- Developed an Enriched Reproducing Kernel Particle Method (RKPM) to solve for linear and nonlinear wave propagation PDEs.
- conducted numerical simulation wave propagation in multiscale material.
- Wrote several user subroutines for commercial software Abaqus.

SUMMARY OF RELATED SKILLS AND QUALIFICATIONS

- **Programming** | JavaScript, Python, HTML, CSS, SQL, MATLAB, R, Fortran, Git
- **Generative AI & Multimedia Tools** | Google Veo, MidJourney, Adobe Firefly, Stable Diffusion, DALL·E, , Kling AI, Google Flow, RunwayML, Gemini
- **ML & Generative AI APIs** | Proficient in TensorFlow, PyTorch, SKLearn and other ML tools, OpenAI (image, text), Gemini (video)

- **Prototyping & Experimentation** | Developed and deployed interactive HCI prototypes, online behavioral experiments, and multimedia web applications (Python/Flask) for generative and trustworthy AI research
- **Media & Data Processing** | Audio, video, and image analysis; multimodal dataset curation, annotation, and quality assessment
- **Software** | Tableau, Abaqus, Ansys, AutoCAD, Rhinoceros 3D, Grasshopper, Solidworks
- Extensive and in-depth collaboration with experimental researchers in group, for NSF funded research
- **Experimental Methods** | Skilled in experiment design, randomization, item response theory, statistical analysis, and open-science workflows
- **Favorite Courses** | Bayesian Statistics, Decision Theory, Law and Digital Technologies

INDUSTRY EXPERIENCE

Software Developer | US API Manager | *SkyCiv* Jan 2021 - Sept 2022

- Developed cloud-based software for structural engineers

Structural Engineer | Automation Expert | *Arup* Nov 2020 - Jan 2021

- Developed and maintained an automated design and analysis workflow for end-to-end collaboration

Structural Engineer Professional | *SOM* Jun 2018 - Nov 2021

- Researched on Finite Element (FE) topology optimization for different structural elements
- ML prediction of post-tensioned tendons with TensorFlow's CNN
- Classified building damages with TensorFlow's CNN

PROFESSIONAL AFFILIATIONS

- Graduate Society of Women Engineers, Professional Development Officer, *Northwestern University*, 2023-2024
- Graduate Society of Women Engineers, Founder and President, *Univ. of Illinois at Chicago*, 2016
- Active reviewer for professional journals such as Journal of Engineering Mechanics, Journal of Applied Sciences, and Journal of Soft Computing in Civil Engineering, 2019-2022