

# Mahsa Mitcheff

U.S. Citizen — no visa sponsorship required

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PhD candidate in Computer Science specializing in **generative AI (StyleGAN and Diffusion models)**, **deep learning**, **machine learning**, **computer vision**, **iris presentation attack detection (PAD)**.

## Technical Skills

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**Programming Language** Python, Matlab

**Libraries & Frameworks:** PyTorch, Keras, TensorFlow, scikit-learn, NumPy, Pandas, Matplotlib, OpenCV, imgaug

## Education

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**Ph.D. in Computer Science and Engineering**

University of Notre Dame, Notre Dame, IN, USA

GPA: 3.93

2021 - Present

**M.S. in Computer Science**

University of Minnesota Duluth, Duluth, MN, USA

GPA: 3.65

2018 - 2020

**M.S. in Industrial Engineering- System Management and Productivity**

University of Tafresh, Tafresh, Iran

GPA: 3.32

2009 - 2012

**B.S. in Hardware Engineering**

Azad University, Arak, Iran

GPA: 3.43

2001 - 2005

## Work Experience

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**Graduate Research Assistant, University of Notre Dame – IN, USA**

Jan 2021 – Present

- Developed a privacy-safe iris PAD pipeline reliant exclusively on synthetic data (generated by StyleGAN and diffusion models), actively trying to increase sample diversity and working to close the remaining 4% performance gap relative to authentic-data models.

**Graduate Teaching Assistant, University of Notre Dame – IN, USA**

Jan 2021 – Aug 2022

**Graduate Research and Teaching Assistant, University of Minnesota – MN, USA**

Aug 2019 – Jan 2021

- Studied physiological and psychological effects of listening to nursery rhymes using EEG and EDA signals.

## Projects

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**Left/Right Eye Detection and Eyelid Curve Estimation**

Feb 2026 – Mar 2026

- Developed a CNN model to detect left/right eyes.
- Trained a ResNet model for estimating eyelids parabolic curves.

**Iris Image Synthesis** (funded by WVU)

May 2023 – Ongoing

- Trained conditional StyleGAN and diffusion models to synthesize iris images under 8 different conditions.
- Designed a gradient-guided exploration of generative models' latent spaces for controlled iris image augmentations.
- Conducted and analyzed two human-subject studies (N=263) using Qualtrics to evaluate participants' ability to distinguish authentic vs. synthetic and authentic vs. imposter iris-image pairs.
- Leveraged locally deployed multimodal LLMs (Open WebUI) to perform iris presentation attack detection.

**Gender Bias in Iris Presentation Attack** (funded by WVU)

May 2022 – May 2023

- Evaluated deep learning based iris PAD performance differences between males and females across 3 datasets and 6 architectures.
- Identified gender-related bias in iris PAD performance and proposed mitigation strategies.

**Human Emotional Responses to DeepDream-Generated Images**

Jan 2022 – May 2022

- Analyzed and visualized how DeepDream-generated image properties affect human emotional responses.

**Detection and Localization of Forgeries in CT Scan Images**

Aug 2021 – Dec 2022

- Investigated deep learning approaches for detecting and localizing forged regions in liver CT images.
- Trained and optimized the Single Shot MultiBox Detector (SSD) for medical image tampering detection.

**RV Trip Pattern Recognition** (funded by Lippert Components Team)

May 2021 – Aug 2021

- Analyzed large-scale RV data using SQL to identify travel behavior pre- and post-COVID-19.
- Delivered actionable insights to support data-driven business decisions and investment strategies.

## Publications

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**Mahsa Mitcheff** and Adam Czajka, “When Humans Judge Irises: Pupil Size Normalization as an Aid and Synthetic Irises as a Challenge” accepted for presentation at the IEEE/CVF WACV 2026 (Workshop on Manipulation, Generative, Adversarial, and Presentation Attacks in Biometrics,), Tucson, AZ, March 6, 2026.

**Mahsa Mitcheff**, Siamul Karim Khan, and Adam Czajka, “Gradient-Guided Exploration of Generative Models’ Latent Spaces for Controlled Iris Image Augmentations”. Submitted to CVPR workshop.

**Mahsa Mitcheff**, Afzal Hossein, Sam Webster, et al., “Iris Liveness Detection Competition (LivDet-Iris) – The 2025 Edition,” IEEE/IAPR International Joint Conference on Biometrics (IJCB), Osaka, Japan, 2025, <https://github.com/CVRL/livdet-iris-2025>.

Agnieszka Marczak-Czajka, Timothy Redgrave, **Mahsa Mitcheff**, Michael Villano, Adam Czajka, “Assessment of human emotional reactions to visual stimuli “deep-dreamed” by artificial neural networks,” *Frontiers in Psychology*, 2024.

**Mahsa Mitcheff**, Patrick Tinsley, Kevin Bowyer, Patrick Flynn, Adam Czajka, “Privacy-Safe Iris Presentation Attack Detection,” accepted for presentation at the IEEE/IAPR International Joint Conference on Biometrics (IJCB), 2024, <https://github.com/CVRL/PrivacySafeIrisPAD>.

Patrick Tinsley, Sandip Purnapatra, **Mahsa Mitcheff**, et al., “Iris Liveness Detection Competition (LivDet-Iris) – The 2023 Edition,” IEEE/IAPR International Joint Conference on Biometrics (IJCB), pp. 1-10, Ljubljana, Slovenia, 2023.

**Mahsa Soufineyestani**, Arshia Khan, and Mina Soufineyestani. “Impacts of music intervention on dementia: A review using meta-narrative method and agenda for future research,” *Neurology International*, Vol. 13, No. 1, pp. 1-17, 2021.

**Mahsa Soufineyestani**, Dale Dowling, and Arshia Khan. “Electroencephalography (EEG) technology applications and available devices,” *Applied Sciences*, Vol. 10, No. 21, 2020.

## Relevant Coursework

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- Artificial Intelligence, Computer Vision, Deep Learning, Machine Learning, Neural Networks

## Other Activities

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- Organizer of LivDet-Iris-2025.
- Teaching iris presentation attack concepts in biometrics to K–12 students.
- Organizer of GO Team Resource Fairs for the 2025 Graduate Student Orientation.