# AMIR ETEFAGHI DARYANI
## COMPUTER VISION RESEARCHER

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## RESEARCH INTERESTS

My research interest includes vision-based perception and decision-making tasks, esp. those that are required for an autonomous robot to navigate in a human environment, such as object/person detection, multiple object/people tracking, social trajectory forecasting, social activity and human pose prediction and autonomous robot planning.

## RESEARCH EXPERIENCE

### UNIVERSITY OF FLORIDA
📍 Gainesville, FL, US

### GRADUATE RESEARCH ASSISTANT
📅 May 2023 – Till now

**Project:** A Real-Time System for Correlating Belongings with Passengers Towards Real Airport

**Role(s):** Researcher  **Technologies:** Python, Pytorch, Cuda, Hipergator

**Description:**

Our research group is proud to contribute to the CLASP (Correlating Luggage and Specific Passengers) project, which is funded by the U.S. Department of Homeland Security Science and Technology Directorate through ALERT. This initiative aims to enhance security at checkpoints by utilizing advanced video analytics to automatically track passengers and their belongings.

**Project:** CaMuViD: Calibration-Free Multi-View Detection

**Role(s):** Researcher  **Technologies:** Python, Pytorch, Cuda, Hipergator

**Description:**

This project introduces a novel approach that extends conventional multi-view detection to operate directly within each camera's image space. Our method finds objects bounding boxes for images from various perspectives without resorting to a bird's eye view (BEV) representation. Thus, our approach removes the need for camera calibration by leveraging a learnable architecture that facilitates flexible transformations and improves feature fusion across perspectives to increase detection accuracy.

**Project:** ViLAD: Video-based Lettuce Association and Detection

**Role(s):** Researcher  **Technologies:** Python, Pytorch, Cuda, Hipergator

**Description:**

Accurately associating individual lettuce plants across disparate time frames poses a distinctive challenge in agricultural robotics. This paper introduces an innovative adaptation of multi-view object detection techniques tailored explicitly for seamless lettuce plant recognition across diverse temporal perspectives. Unlike conventional methodologies, our approach emphasizes the identification and linkage of lettuce plants observed across distinct time frames captured by heterogeneous sensor arrays. Our proposed model is designed to process two images depicting the same lettuce plants at distinct temporal instances. In addition to generating bounding boxes corresponding to each plant instance in the respective views, our model excels in associating these plants across temporal intervals.

### INDEPENDANT RESEARCH
📍 Tehran, Iran

### COMPUTER VISION RESEARCHER
📅 May 2021 - June 2022

**Project:** E2F-GAN: Eyes-to-Face Inpainting via Edge-Aware Coarse-to-Fine GANs

**Role(s):** Researcher  **Technologies:** Python, Tensorflow, Cuda

**Description:**

Face inpainting is a challenging task aiming to fill the damaged or masked regions in face images with plausibly synthesized contents. Based on the given information, the reconstructed regions should look realistic and more importantly preserve the demographic and biometric properties of the individual. The aim of this project was to reconstruct the face based on the periocular region (eyes-to-face).

**Project:** IRL-Net: Inpainted Region Localization Network via Spatial Attention

**Role(s):** Researcher  **Technologies:** Python, Tensorflow, Cuda

**Description:**

Identifying manipulated regions in images is a challenging task due to the existence of very accurate image inpainting techniques leaving almost unnoticeable traces in tampered regions. These image inpainting methods can be used for

multiple purposes (e.g., removing objects, reconstructing corrupted areas, eliminating various types of distortion, etc.) makes creating forensic detectors for image manipulation an extremely difficult and time-consuming procedure. The aim of this project was to localize the tampered regions manipulated by image inpainting methods.

## EDUCATION

**PHD, UNIVERSITY OF FLORIDA**
Agricultural and Biological Engineering
Under supervision: Prof. Henry Medeiros
GPA of 3.92

📅 2027

**MSC, AMIRKABIR UNIVERSITY OF TECHNOLOGY**
Electrical Engineering
Under supervision: Prof. Saeed Sharifian
GPA of 3.65

📅 2022

**BSC, UNIVERSITY OF GUILAN**
Electrical Engineering
Under supervision: Prof. Reza PR Hasanzadeh
GPA of 3.88

📅 2019

## TECHNICAL SKILLS

- **Programming Languages** `Python R C++ Matlab`
- **Deep Learning and Machine Learning** `Pytorch Tenrsorflow scikit learn`
- **Databases** `SQL`
- **Tools  Platforms** `Git Docker`

## HONORS AND AWARDS

🏆 **Top Up Fellowship in the amount of $2,000 in Fiscal Year 2025** 📅 Jul 2024
This fellowship was awarded based on your academic standing in the department, and your dedication to the research you are involved in.

🏆 **Grinter Fellowship in the amount of $2,000 for Fall 2023 and Spring 2024** 📅 Jul 2023
This fellowship was awarded based on my academic performance, leadership, and dedication to your career direction, as well as the high quality of research I was involved in.

🏆 **Grinter Fellowship in the amount of $1,000 for Summer 2023** 📅 April 2023
This fellowship was awarded to new graduate students who have shown themselves to be truly exceptional in their field of study.

## PUBLICATIONS

- **Amir Etefaghi**, Henry Medeiros, "ViLAD: Video-based Lettuce Association and Detection".(to be submitted)
- **Amir Etefaghi**, Henry Medeiros, "CaMuViD: Calibration-Free Multi-View Detection". *Conference on Computer Vision and Pattern Recognition (CVPR), 2025*
- **Amir Etefaghi Daryani**, Mahdieh Mirmahdi, Ahmad Hassanpour, Hatef Otroshi Shahreza, Bian Yang, Julian Fierrez, "IRL-Net: Inpainted Region Localization Network via Spatial Attention". *IEEE ACCESS*, 2023.
- Ahmad Hassanpour, Sayed Amir Mousavi Mobarakeh, **Amir Etefaghi Daryani**, Raghavendra Ramachandra, Bian Yang, "Synthetic face generation through eyes-to-face inpainting", *IEEE International Joint Conference on Biometrics (IJCB)*, 2023.
- **Amir Etefaghi Daryani**, Saeed Sharifian, "AdaInNet: An adaptive inference engine for Distributed Deep Neural Networks offloading in IOT-FOG applications based on Reinforcement Learning", *Journal of Supercomputing*, 2023
- Ahmad Hassanpour, **Amir Etefaghiv Daryani**, Mahdieh Mirmahdi, Kiran Raja, Bian Yang, Christoph Busch, and Julian Fierrez, "E2F-GAN: Eyes-to-Face Inpainting via Edge-Aware Coarse-to-Fine GANs", *IEEE ACCESS*, 2022

## REFERENCES

- **Prof. Henry Medeiros**, Department of Agricultural and Biological Engineering University of Florida, hmedeiros@ufl.edu
- **Prof. Changying (Charlie) Li**, Department of Agricultural and Biological Engineering University of Florida, cli2@ufl.edu