Mohamed Amine Marnissi

R&D in Computer Vision & AI

Personal Information

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Professional Experience

01/2023-12/2024

Director of Innovation & AI Division at Enova Robotics - Tunisia, *(Novation City Sousse Technopole, Sousse, 4051, Tunisia)*

- Supervise and manage AI projects from conception to deployment.
  - Developed a system to automatically detect damaged juice and sparkling water bottles on Delice's production lines.
  - Created a system to assess the quality of industrial cakes at Moulin d'Or by checking texture, shape, color, and uniformity.
  - Implemented a project for inspecting industrial pallets to filter out damaged or non-compliant pallets.
  - Develop a predictive model to assess employee attrition risk.
  - Development of a LLM to Optimize Recruitment Processes.
- Define and implement the overall AI vision and strategy aligned with company goals.
- Monitor technological trends and advancements to keep the company at the forefront of innovation.
- Recruit, train, and manage specialized AI teams.

2022-2023

Research Engineer in Computer Vision at Enova Robotics - Tunisia, *(Novation City Sousse Technopole, Sousse, 4051, Tunisia)*

- Development of a deep learning pipeline for human detection in thermal cameras.
- Deployment of object detection models on the *NVIDIA© Jetson™* platform using *DeepStream SDK* and *NVIDIA TensorRT™*.
- Design and implementation of a complete obstacle detection and tracking system for a mobile robot, day and night, using ROS.
- Design and development of a model for industrial pallet inspection.
- Developed a deep learning model to integrate radar and camera data.

2018-2023

Ph.D. in Computer Systems Engineering at ENIS, *(National Engineering School of Sfax (ENIS), Sfax, Tunisia)*

- Development of a graphical interface to analyze thermal and visible video streams using the *pyqt5* library.
- Adaptation of a deep learning model using the *Vision Transformer* technique to create masks from thermal images.
- Creation of a deep learning model based on a Generative Adversarial Network *(TE-GAN)* to enhance poor quality thermal images *(Pytorch)*.
- Creation of a deep learning model based on the *Faster-RCNN* detector and *Adversarial Learning* to detect people from thermal or visible cameras in real-time.

Supervision Experience

2023	Co-Supervisor, National Engineering School of Sousse, Enova Robotics, **Master's Thesis:** Bispectral Camera Control System for Tracking Suspect Individuals.
2022	Co-Supervisor, Higher Institute of Applied Sciences and Technology of Sousse, Enova Robotics, **Master's Thesis:** Multispectral Pedestrian Detection Model for a Security Robot.
2021	Co-Supervisor, Higher Institute of Applied Sciences and Technology of Sousse, (ISSATSo), LATIS Lab, Enova Robotics, **Master's Thesis:** Robotic Vision for Object Detection from Visible and Thermal Cameras.

Academic Background

2018-2023	**Ph.D. in Computer Systems Engineering** • National Engineering School of Sfax (ENIS), Sfax, Tunisia. • Project: Detection of Suspicious Events by Multi-Spectral Cameras in a Robotic Application using Deep Learning Approaches. • Thesis developed as part of a VRR project. • **Highest honors with Jury Congratulations** • **Presidential Award for the Best Doctoral Thesis of 2023**
2017-2018	**Master's in Intelligent and Communicative Systems** • National Engineering School of Sousse (ENISo), Sousse, Tunisia. • Project: Crowd Density Estimation with Deep Learning. • **Highest honors**
2016-2017	**Sabbatical Year: Voluntary Work and Training Activities** • Volunteered in various associations. • Organized and conducted training sessions and workshops.
2013-2016	**Engineering Degree in Computer Science** • National Engineering School of Sfax (ENIS), Sfax, Tunisia. • Project: Design and Development of a Web Application for Stock Management. • **With distinction**
2010-2013	**Mathematics and Physics** • Preparatory Institute for Engineering Studies of Bizerte (IPEIB), Bizerte, Tunisia.
2010	**Baccalaureate in Computer Science** • Lycée 14 Janvier, Bizerte, Tunisia.

SCIENTIFIC PRODUCTIONS

Journals

1. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Improved Domain Adaptive Object Detector via Adversarial Feature Learning*", Computer Vision and Image Understanding. 2023 **[Quartile: Q1, IF: 4.886]**.
2. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Feature Distribution Alignments for Object Detection in the Thermal Domain*", The Visual Computer, 1-13. 2023 **[Quartile: Q2, IF: 2.835]**.
3. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,**

"*Multi-domain pedestrian detection using adversarial learning and domain-specific batch normalization*", The Visual Computer, 1-15. 2022 **[Quartile: Q2, IF: 2.835]**.

4. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Low-quality thermal image enhancement using generative adversarial network*", Infrared Physics and Technology 111, 103491. 2020 **[Quartile: Q2, IF: 2.638]**.
5. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Suspicious event detection using multi-spectral images in public transport for visual-surveillance applications*", The Visual Computer 35 (12), 1749-1766. 2019 **[Quartile: Q2, IF: 2.835]**.

Conferences

1. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Automatic detection of humans in thermal images using domain adaptation techniques*", 14th International Conference on Computer Vision Theory and Applications. Prague, Czech Republic. 2019.
2. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Suspicious event detection using multi-spectral images in public transport for visual-surveillance applications*", 14th International Conference on Computer Vision Theory and Applications. Prague, Czech Republic. 2019.
3. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara,** "*Multi-spectral images in public transport for visual-surveillance applications*", IEEE/ACS 15th International Conference on Computer Systems and Applications. Aqaba, Jordan. 2018.

Patent

1. **Mohamed Amine Marnissi, Hajer Fradi, Anis Sahbani, Najoua Essoukri Ben Amara**, "*Intelligent and embedded system for video surveillance of high-risk sites based on visible and thermal bispectral detection*".

Technical Skills

Theoretical Skills:	Deep Learning, Convolutional Neural Networks (CNN), YOLO, Auto-encoders, LSTMs, U-NET, NLP, LLM, Generative AI.
Deep Learning Frameworks:	Keras, Tensorflow, Pytorch, Scikit-learn, Flask.
Programming Languages:	Python, Java, J2EE, C/C++, JavaScript, HTML, XML, SQL, PL/SQL, MATLAB.
Model Deployment:	*NVIDIA Jetson*, Docker, Kubernetes, CI/CD, Jenkins, ROS.
Software Development Tools:	Git, Bitbucket, SonarQube, JIRA, Docker, Jupyter Notebook.

Languages

Arabic:	Native.
French:	Fluent.
English:	Professional Working Proficiency.

Social Skills and Qualities

- Strong ability to proactively meet others' needs.
- Good technical skills in general and a strong passion for coding.
- Good general skills and strong expertise and interest in algorithms.
- Good ability to learn new things.
- Motivated attitude to organize scientific events and capable of working alone or within a professional team.

Reference

Najoua Essoukri Ben Amara: najoua.benamara@eniso.rnu.tn
Anis Sahbani: anis.sahbani@gmail.com.