# Ioannis Karagiannis

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LinkedIn | Personal-Website | GitHub | Kaggle | Google-Scholar | ResearchGate

## CAREER OBJECTIVE

Motivated Research Engineer with strong background in Robotics, Control Theory and Signal Processing, and hands-on experience in Positioning Systems (SLAM), Computer Vision, Object Detection, Object Tracking, Augmented Reality, Artificial Intelligence and Deep Learning, seeking a Research Engineer position to develop cutting edge software solutions and applications.

## WORK EXPERIENCE

**I-SenseGroup/ICCS** **Athens, Greece, Mar 2024 – Present**
*AI/ML Robotics Engineer*

- Developing an AI solution leveraging zero-shot object detection, visual language models, and multimodal LLMs to assess recyclability of user-uploaded images complemented by a user-friendly web interface.
- Developed advanced computer vision service for an ergonomics assessment project utilizing state-of-the-art lightweight pose estimators.
- Developed advanced computer vision service that estimates stockpile volumes and extraction rates in opencast mining for the Integrated Earth Observation Platform (EU Horizon project TERRAVISION).

**Intracom Defense SA** **Athens, Greece, Jul 2021 – Feb 2024**
*Senior Artificial Intelligence Engineer* Aug 2023 – Feb 2024

- Led and mentored a team of three in developing automatic target recognition and tracking (ATR&T) systems, focusing on target detection and target tracking algorithms.
- Deployed the ATR&T system on resource-constrained devices (e.g., NVIDIA Jetson {Nano, Xavier AGX, Orin NX}).
- Contributed to the development and preparation of EU Horizon and EDF proposals (e.g., PROTEAS, TICHE) by strengthening and aligning them with cutting-edge AI methodologies and technologies.

*Staff Artificial Intelligence Engineer* Jul 2021 – Jul 2023

- Developed Automatic Target Recognition and Tracking (ATR&T) systems for various UAV projects. A variant of such a system is to be deployed on the mothership airborne platform (MAP) and the foldable-wing drone airborne platforms (DAPs) of the EU-funded LOTUS project.
- Supported the development of a framework that utilizes secure collaborative learning in image recognition for ISR missions involving classified data by blending disruptive technologies such as Federated Learning (FL) or Private Aggregator of Teachers Ensemble (PATE) methods with Fully Homomorphic Encryption (FHE), Multi-Party Computation (MPC), or Verifiable Computing (VC) within the scope of the EU-PADR-funded PRIVILEGE project.

**Ericsson AB** **Stockholm, Sweden, Mar 2018 – May 2021**
*Experienced Researcher* Jun 2020 – May 2021

- Developed edge-assisted SLAM for resource-constrained devices (NVIDIA Jetson Xavier NX/AGX).
- Developed machine learning models to predict the accuracy of SLAM algorithms in situations where the ground-truth was missing, by utilizing proxies of accuracy.
- Conducted research in multi-agent SLAM with heterogeneous sensors.

*Researcher* Mar 2018 – May 2020

- Developed collaborative multi-sensory communication application in Unity combining mixed reality (Microsoft HoloLens 1st gen), haptics (3D Systems Touch) and 3D spatial audio (Google Resonance SDK).
- Demonstrated the aforementioned application at MWC-2019 in Barcelona representing Ericsson as business builder.
- Supported, troubleshooted, and maintained the aforementioned application both for internal projects and for other events such as Digitalize in Stockholm 2019 - Remote Collaboration.
- Supervised two interns and three master thesis students.

**SafeLine Sweden AB** **Stockholm, Sweden, Sep 2015 – Oct 2016**
*Research Engineer*

- Developed independent positioning system (IPS) for elevators employing SLAM algorithms and Particle Filters.
- Developed a smart sensor node for condition monitoring and predictive maintenance of elevators.

**KTH Royal Institute of Technology** **Stockholm, Sweden, Jun 2015 – Aug 2015**
*Research Engineer Intern*

- Naval Architecture Center: Developed gyroscopic stabilizer in C++ for a small-scale two-wheeled vehicle.
- Signal Processing Laboratory: Developed android app in Java serving as floor-indicator for elevators.

**University of Patras** **Patras, Greece, Mar 2012 – Jun 2013**
*Research Engineer*

- Supervised two master thesis students.
- Teacher assistant in Signals and Systems, Neural Networks, and Adaptive Control courses.
- Authored and co-authored three published papers.

## EDUCATION

**KTH Royal Institute of Technology** **Stockholm, Sweden, Aug 2013 – Jun 2015**
**School of Electrical Engineering and Computer Science**
*M.Sc. in Systems, Control and Robotics (GPA: 4.76/5.0)*

**University of Patras** **Patras, Greece, Sep 2005 – Feb 2012**
**School of Electrical and Computer Engineering**
*5-year Diploma (M.Eng. equivalent) in Electrical and Computer Engineering (GPA: 7.36/10.0)*

## LANGUAGES

Greek (Native), English (Proficient - C1 level)

## COMPUTER SKILLS

- **Programming Languages:** Python, C/C++, C#, ROS, Java
- **DL/ML Frameworks and Tools:** Keras, TensorFlow, PyTorch, ONNX, cuDNN, CUDA Toolkit, TensorRT
- **Computer Vision & Detection:** OpenCV, Open3D, YOLO, Darknet, DeepSORT, Google MediaPipe Pose Landmarker, Grounding DINO
- **Multimodal & Generative Models:** Stable Diffusion, Meta LLaMA, CLIP
- **IDEs & Dev Environments:** Microsoft Visual Studio, Jupyter Notebook, Unity, Xcode, Eclipse, Android Studio, MATLAB/Simulink, LabVIEW
- **Data Analysis and Visualization Libraries:** Pandas, Numpy, Scipy, Scikit-Learn, Seaborn, Matplotlib
- **Version Control & DevOps:** Git, Docker
- **Project Management:** Jira
- **Operating Systems:** Linux (Ubuntu/Debian/Mint), Windows, MacOS

## PUBLICATIONS

- Araújo, José. Taher Kouhestani, Amir Hossein. Andersson, Lars. Gonzalez Morin, Diego. Karagiannis, Ioannis. Muddukrishna, Ananya. 2022. Determining a transformation between coordinate systems in an ultrasonic haptic device and a visual sensor device. US Patent US20230014448A1, filed Mar. 26, 2019, issued June 02, 2022, and granted Feb. 6, 2024.
- Karagiannis, Ioannis. Araújo, José. Taher Kouhestani, Amir Hossein. Gonzalez Morin, Diego. Andersson, Lars. Muddukrishna, Ananya. 2022. Controlling sensor activation and deactivation for energy efficient localization. US Patent US20230033951A1, filed Dec. 17, 2019, and issued June 16, 2022.
- Araújo, José. Andersson, Lars. Gonzalez Morin, Diego. Karagiannis, Ioannis. Taher Kouhestani, Amir Hossein. 2021. Portable electronic device for mixed reality headset. US Patent US11314094B2, filed Feb. 22, 2021, issued June 10, 2021, and granted Apr. 26, 2022.
- Araújo, José. Bruns, Leonard. Gonzalez Morin, Diego. Karagiannis, Ioannis. Taher Kouhestani, Amir Hossein. 2022. Calibration of mobile electronic devices connected to headsets wearable by users. US Patent US11854234B2, filed Mar. 29, 2022, issued Jul. 07, 2022, and granted Dec. 26, 2023.
- S. Hernandez, J. Araujo, P. Jensfelt, I. Karagiannis, A. Muddukrishna, B. Donyanavard, "Cross-layer Configuration Optimization for Localization on Resource-constrained Devices", *2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 2282-2288, Sep. 2021.
- Isaac Skog, Ioannis Karagiannis, Anders Betts Bergsten, Jonas Härdén, Lars Gustafsson, and Peter Händel, "A Smart Sensor Node for the Internet-of-Elevators – Non-Invasive Condition and Fault Monitoring", *IEEE Sensors Journal*, vol. 17, no. 16, pp. 5198-5208, Aug. 2017.

As of June 2024 I have 3 granted patents. For an updated list of publications see my Google-Scholar profile.

## ADDITIONAL SKILLS AND QUALIFICATIONS

**Coursera** **online**

- *AI for Good Specialization Certificate* **Sep 2023**
- *Deep Learning Specialization Certificate* **Apr 2022**

**DataCamp** **online**
*Data Scientist with Python Track Certificate* **Apr 2021**

**Hellenic Army** **Greece**
*Fulfilled Military Obligations* **Nov 2016 – Aug 2017**

**Tohoku University** **Sendai, Miyagi, Japan**
*Certificate of Completion of Tohoku Engineering Summer Program 2014 - Robotics* **Jul 2014 – Aug 2014**

**Hellenic Mathematical Society** **Kalamata, Greece**
*Certificate of Excellence at the Pan-Hellenic Mathematics Competition 'THALIS'* **2003**

## INTERESTS

Running, Swimming, Playing Guitar, Philosophy.