

# Gianmarco Gallardo

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## Research Interests

My research interest is focused on computer vision and how learning techniques allow us to develop systems able to reason about the visual world. The main topics of my research interest include self-supervised learning, lifelong machine learning, visual question answering, medical imaging, and deep learning techniques for visual recognition problems.

## Education

### Rochester Institute of Technology (RIT)

Ph.D. in Imaging Science

Deep Learning and Computer Vision

*Rochester, New York, U.S.A.*

*Aug. 2019 - May 2024 (expected)*

### Universidad Nacional de Ingeniería (UNI)

B.S. in Mechatronics Engineering

*Rimac, Lima, Peru*

*Mar. 2011 - Dec. 2015*

• Relevant course work:

Artificial Intelligence, Image Processing, Object Oriented Programming, Research Methodology, Statistics and Probabilities, Linear Algebra, Biology for Engineers, Analysis and Control of Robots, Sensor Technology.

## Experience

### Machine Learning Engineer

*San Isidro, Lima, Peru*

EVERIS PERU SAC

*May. 2018 - Jul. 2019*

- Developed a vehicle damage intensity classifier using a deep convolutional neural network with 70 percent of accuracy. Deployed the system using Docker and flask for an insurance company.
- Implemented a recommendation system with implicit feedback based on neural networks and collaborative filtering for 1.5 million of clients and +150K of items.
- Developed a real-time cosmetic product classification app for mobile devices by training a convolutional neural network (MobileNet) with 96 percent of accuracy.
- Applied a face emotion recognition system based on Squeeze-and-Excitation architecture to analyze customer satisfaction.
- Applied a real-time Multi-Object Tracking system based on YOLOV3 and deep association metrics in order to analyze offices space usage.
- Developed an audio emotion classifier with 70 percent of accuracy by training a deep convolutional neural network on spectrograms.  
*Technologies used: Pytorch, Keras, TensorFlow Lite, Python, OpenCV, Librosa, Docker, PySpark, DVC, Git, GitHub*

### Research Intern - Lung Nodule Classification

*Malvern, Pennsylvania, U.S.A*

SIEMENS HEALTHINEERS

*Apr. 2017 - Mar. 2018*

- Improved their previous results on lung nodule classification by replacing their 2D approach with a 3D convolutional neural network. My system got 90 percent of sensitivity with 1.45 false positives per patient, reducing FP rate by 2x compared with the previous system.
- Developed a labeling tool for lung nodule images in order to decrease labeling time and get more labeled training data.  
*Technologies used: Caffe, Python, SimpleITK, Tkinter*

### Research Assistant - Diabetic Retinopathy Detection

*Rimac, Lima, Peru*

UNIVERSIDAD NACIONAL DE INGENIERÍA (UNI)

*Jul. 2016 - Mar. 2017*

- Trained a convolutional neural network to predict Diabetic Retinopathy cases from digital retina images with 83 percent of accuracy.
- The results were presented at International Conference on Artificial Neural Networks (ICANN 2017) held in Italy.  
*Technologies used: Keras, Python, OpenCV*

### Research Assistant - Simultaneous Localization and Mapping

*Rimac, Lima, Peru*

CENTER FOR INFORMATION TECHNOLOGY AND COMMUNICATIONS (CTIC)

*Jan. 2014 - Apr. 2015*

- Developed the perception stage of an autonomous mobile robot simulation by implementing "Particle filter" for position estimation, and "Occupancy Grid Mapping" for map representation.
- Results were presented at International Symposium on Multibody Systems and Mechatronics (MUSME 2014) held in Mexico.  
*Technologies used: Matlab, Python, ROS, BeagleBone Black*

## Computer Skills

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<b>Languages</b>	Python, SQL, C++
<b>Frameworks</b>	Pytorch, Keras, Caffe, TensorFlow, Scikit Learn, OpenCV, SimpleITK, PySpark
<b>Tools</b>	Git, DVC (Data Version Control), Docker, MATLAB, ROS, Power BI, Azure, Google Cloud Platform, Cloudera
<b>Hardware Platforms</b>	Arduino, BeagleBone Black, Raspberry PI
<b>Operating Systems</b>	Linux (Ubuntu), Windows

## Publications

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### ICANN 2017

INTERNATIONAL CONFERENCE ON ARTIFICIAL NEURAL NETWORKS

2017

- García, G., Gallardo, J., Mauricio, A., López, J., & Del Carpio, C. (2017, September). Detection of Diabetic Retinopathy Based on a Convolutional Neural Network Using Retinal Fundus Images. In International Conference on Artificial Neural Networks (pp. 635-642). Springer, Cham.

### MUSME 2014

INTERNATIONAL SYMPOSIUM ON MULTIBODY SYSTEMS AND MECHATRONICS

2014

- Mauricio, A., Nieves, A., Castillo, Y., Hilaraca, K., Fonseca, C., Gallardo, J., ... & Rodríguez, G. (2015). Multi-robot Exploration and Mapping Strategy in Underground Mines by Behavior Control. In Multibody Mechatronic Systems (pp. 101-110). Springer, Cham.

## Extracurricular Activity

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### Everis Artificial Intelligence group

*San Isidro, Lima, Peru*

MEMBER & COORDINATOR

*Aug. 2018 - Present*

- Delivering internal workshops and presentations on a variety of Machine Learning topics every two weeks.

### Artificial Intelligence research group (GISCIA) - UNI

*Rimac, Lima, Peru*

MEMBER & PRESIDENT AT 2016

*Mar. 2013 - Dec. 2016*

- Organizing meetings, seminars and talks introducing undergraduates to research projects in Deep Learning, Computer Vision and Robotics.

## Honors & Awards

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- 2019 **Speaker**, Everis "Alimentatec" series - Recommendation Systems
- 2018 **Speaker**, Everis Talks webinar series - Computer Vision
- 2016 **Research Grant**, Research Institute of the Mechanical Eng. Department (INIFIM)
- 2016 **President**, Artificial Intelligence and Control Systems Research Group (GISCIA)
- 2014 **Travel Grant**, Universidad Nacional de Ingeniería Travel Grant to MUSME Symposium
- 2014 **Speaker**, National Conference of Technology organized by CONCYTEC
- 2013 **Travel Grant**, Mechanical Engineering Department Travel Grant to XII LARC
- 2013 **Scholarship**, Training course at Digital Manufacturing Center FabLab UNI

## Languages

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**English** Advanced (TOEFL iBT score: 99)

**Spanish** Native Speaker