

# GIANMARCO J. GALLARDO CALLALLI

Imaging Science PhD Candidate @ RIT

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## RESEARCH INTERESTS

Self-Supervised Learning

Continual Learning

Computer Vision

Deep Learning

AI for Healthcare

## EDUCATION

Ph.D. in Imaging Science, [Rochester Institute of Technology](#) 📅 August 2019 – December 2025 (expected)

🇺🇸 Rochester, New York

- Relevant course work: Deep Learning for Vision, Human Visual System, Image Processing, and Computer Vision.

B.Sc. in Mechatronics Engineering, [Universidad Nacional de Ingeniería](#) 📅 March 2011 – December 2015

🇵🇪 Lima, Peru

- Relevant course work: Machine Learning, Image Processing, Object Oriented Programming, Research Methodology

## EXPERIENCE

Research Intern, [Siemens Healthineers](#) 📅 Aug 2023 – Nov 2023 🇺🇸 Malvern, Pennsylvania

- Developed and implemented self-supervised pre-training strategies using masked autoencoders for 3D organ classification, 3D organ segmentation, and 3D lung nodule detector.
- Accelerated training of a transformer-based 3D lung nodule detector by x1000, in terms of number of iterations, through self-supervised pre-training.

Technologies used: Python, PyTorch, MONAI, Azure AI ML

Data Scientist, [NTT DATA Europe & Latam](#) 📅 May 2018 – July 2019 🇵🇪 Lima, Peru

- Developed and deployed a deep convolutional neural network for vehicle damage intensity classification with 70% accuracy 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% accuracy.
- Developed an audio emotion classifier with 70% accuracy by training a deep convolutional neural network on spectrograms.

Technologies used: PyTorch, Keras, TensorFlow Lite, Python, OpenCV, Librosa, Docker, Flask, PySpark, DVC, Git, GitHub

Research Intern, [Siemens Healthineers](#) 📅 April 2017 – March 2018 🇺🇸 Malvern, Pennsylvania

- Improved lung nodule classification by designing a 3D convolutional neural network for CT scans, achieving 90% sensitivity with 1.45 false positives per patient, reducing the false positive rate by half compared to the previous system.
- Developed an annotation tool to correctly tag lung nodule images.
- Summarized and presented current machine learning state-of-the-art works in reading groups.

Technologies used: Caffe, Python, SimpleITK, Tkinter, CT scan data

Research Assistant, [Universidad Nacional de Ingeniería \(UNI\)](#) 📅 July 2016 – March 2017 🇵🇪 Lima, Peru

- Developed a convolutional neural network achieving 83% accuracy in detecting diabetic retinopathy from retinal images.
- The results were presented at International Conference on Artificial Neural Networks (ICANN 2017) held in Italy.

Technologies used: Keras, Python, OpenCV

Software Tester (QA), [International Business Machines \(IBM\)](#) 📅 April 2016 – October 2016 🇵🇪 Lima, Peru

- Developed and executed testing strategies to identify and resolve functional and non-functional defects within a cellular carrier's database management system.
- Built a face recognition system using IBM Watson visual recognition services for client identification.

Technologies used: Python, SQL, OpenCV, Watson visual recognition

## PUBLICATIONS

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- M.Y. Harun, K. Lee, **J. Gallardo**, G. Krishnan, and C. Kanan. *What Variables Affect Out-Of-Distribution Generalization in Pre-trained Models?*. In: Conference on Neural Information Processing Systems (NeurIPS), 2024
- **J. Gallardo**, C. Savur, F. Sahin, and C. Kanan. *Human Emotion Estimation through Physiological Data with Neural Networks*. In: System of Systems Engineering Conference (SoSE), 2024
- M.Y. Harun, **J. Gallardo**, and C. Kanan. *GRASP: A Rehearsal Policy for Efficient Online Continual Learning*. In: Conference on Lifelong Learning Agents (CoLLAs), 2024
- M.Y. Harun\*, **J. Gallardo**\*, T.L. Hayes, R. Kemker, and C. Kanan. *SIESTA: Efficient online continual learning with sleep*. Transactions on Machine Learning Research (TMLR), 2023
- Md Y. Harun, **J. Gallardo**, T.L. Hayes, C. Kanan. *How Efficient Are Today's Continual Learning Algorithms?*. In: Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR-W), 2023
- I. Sur, Z. Daniels, A. Rahman, K. Faber, **J. Gallardo**, T.L. Hayes, C.E. Taylor, M.B. Gurbuz, J. Smith, S. Joshi, N. Japkowicz, M. Baron, Z. Kira, C. Kanan, R. Corizzo, A. Divakaran, M. Piacentino, J. Hostetler, and A. Raghavan. *System design for an integrated lifelong reinforcement learning agent for real-time strategy games*. In: International Conference on AI-ML Systems, 2022
- **J. Gallardo**, T.L. Hayes, C. Kanan. *Self-supervised training enhances online continual learning*. In: British Machine Vision Conference (BMVC), 2021
- G. García, **J. Gallardo**, A. Mauricio, J. López, C. Del Carpio. *Detection of diabetic retinopathy based on a convolutional neural network using retinal fundus images*. In: Artificial Neural Networks and Machine Learning (ICANN), 2017

\* Equal contribution

## TECHNICAL SKILLS

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- **Programming:** Python
- **Deep Learning Libraries:** PyTorch, PyTorch Lightning, Continuum, MONAI
- **Applications:** Git, Bash Scripting, LaTeX, WandB, TensorBoard

## LANGUAGES

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English ●●●●● Spanish ●●●●●