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RESEARCH INTERESTS

Self-Supervised Learning

Continual Learning

Computer Vision

Deep Learning

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. The pre-training strategies reduced the required training iterations for a transformer-based 3D lung nodule detector by x1000 compared to training without pre-training.

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

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

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

- Improved previous system on lung nodule classification by developing a 3D convolutional neural network that processes 3D CT scan data directly, instead of processing 2D data. My system got 90 percent of sensitivity with 1.45 false positives per patient, reducing the false positive 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.
- Summarized and presented in reading groups current machine learning state-of-the-art works

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

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

- 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

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.
- Developed a face recognition system using IBM Watson visual recognition services to identify clients.

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

PUBLICATIONS

- 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

TECHNICAL SKILLS

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

LANGUAGES

English ●●●●● Spanish ●●●●●