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Summary

Computer vision and machine learning researcher pursuing a **PhD in Imaging Science** (expected December 2026), specializing in **self-supervised learning, continual learning, and visual representation learning**, with research interests in **vision foundation models**. Research contributions include efficient continual learning, memory replay, and **out-of-distribution generalization** in pretrained vision models. At **Siemens Healthineers**, developed and evaluated **3D self-supervised pretraining** methods for medical imaging, studying their effectiveness for downstream detection, segmentation, and classification. Additional industry experience includes video analytics and applied computer vision. Co-author of peer-reviewed publications at **ICML, NeurIPS, TMLR, BMVC, and CoLLAs**.

Technical Skills

- **Computer Vision & Representation Learning:** Self-Supervised Learning, Continual Learning, Transfer Learning, Out-of-Distribution Generalization, Vision Transformers (ViT), CNNs (2D/3D), Image Classification, Object Detection, Segmentation, Multi-Object Tracking, Image Enhancement.
- **Medical Imaging:** CT, MRI, DICOM Processing, Medical Image Preprocessing, Volumetric Resampling, Intensity Normalization, 3D Data Augmentation, Case-Level Evaluation.
- **Programming & Frameworks:** Python, PyTorch, MONAI, OpenCV, SimpleITK, Pydicom, Scikit-learn, PyTorch Lightning Fabric.
- **Training & Infrastructure:** Distributed Data Parallel (DDP), Mixed-Precision Training, Azure AI ML, Docker, Reproducible Experimentation, Model Benchmarking, Error Analysis.

Experience

Rochester Institute of Technology 

Rochester, NY, USA 

Doctoral Researcher

August 2019 – Present

- Researched **out-of-distribution generalization and transfer learning** in pretrained vision models, investigating neural collapse and representation robustness (NeurIPS 2024, ICML 2025).
- Co-developed **SIESTA**, an efficient wake-sleep framework for online continual learning, enabling ImageNet-1K continual learning in **under 2 hours on a single GPU** (TMLR 2023).
- Studied **self-supervised learning** (MoCo-v2, Barlow Twins, SwAV) for online continual learning, achieving a **14.95% relative improvement** in ImageNet top-1 accuracy over prior state of the art (BMVC 2021).
- Conducted **large-scale experiments** with CNNs and Vision Transformers using **PyTorch, multi-GPU DDP, and mixed precision**, evaluating accuracy, generalization, and computational efficiency.

Siemens Healthineers 

Malvern, PA, USA 

ML Research Intern

August 2023 – November 2023

- Developed and evaluated **3D self-supervised pretraining** methods (MAE, SimMIM, I-JEPA) on task-specific CT datasets for **lung nodule detection, organ classification, and UNETR segmentation**.
- Achieved comparable downstream performance with **up to 1,000× fewer training iterations** than training from scratch for a transformer-based **3D lung nodule detector**.
- Built reproducible **PyTorch/MONAI** training and evaluation pipelines on **Azure AI ML**, using **multi-GPU DDP and mixed precision**.

NTT DATA Europe & LATAM 

Lima, Peru 

Data Scientist

May 2018 – July 2019

- Led model training and evaluation for a **production recommender system** personalizing promotions for **1.5M banking clients**, supporting deployment and performance analysis.
- Developed and evaluated **CNN-based computer vision models** for vehicle damage severity classification and beauty product recognition.

- Built an **OpenCV video analytics pipeline** using object detection and **Deep SORT tracking** to estimate indoor space utilization.

Siemens Healthineers 

Malvern, PA, USA 

ML Research Intern

April 2017 – March 2018

- Developed and evaluated a **3D CNN for lung nodule classification** on chest CT, reducing **false positives per patient by 50%** compared to a production baseline while maintaining **90% sensitivity**.
- Built an **annotation and case review tool** to support expert labeling, dataset inspection, and iterative model error analysis.

Universidad Nacional de Ingeniería 

Lima, Peru 

Research Assistant

July 2016 – March 2017

- Developed and evaluated a **CNN-based diabetic retinopathy detection model** using retinal fundus images, achieving **83% accuracy** and contributing to a publication at **ICANN 2017**.

IBM 

Lima, Peru 

Software Tester (QA)

April 2016 – October 2016

- Performed **software quality assurance (QA) testing** for a telecom database system, reproducing issues and validating fixes.

Education

Rochester Institute of Technology 

Rochester, NY, USA 

Ph.D. in Imaging Science

August 2019 – December 2026 (expected)

- **Advisor:** Dr. Christopher Kanan.

Universidad Nacional de Ingeniería 

Lima, Peru 

B.Sc. in Mechatronics Engineering

March 2011 – December 2015

- **Undergraduate project:** Developed a mobile robotics prototype integrating ROS and monocular ORB-SLAM on an iRobot Create platform.

Publications

Input- and Feature-Space Correction for Cross-Hospital IHC Grading 

NeurIPS-W 

J. Lee, J. Gallardo, and C. Kanan

2026

Controlling Neural Collapse Enhances Out-of-Distribution Detection and Transfer Learning 

ICML 

Md.Y. Harun, J. Gallardo, and C. Kanan

2025

What Variables Affect Out-of-Distribution Generalization in Pretrained Models? 

NeurIPS 

Md.Y. Harun, K. Lee, J. Gallardo, G. Krishnan, and C. Kanan

2024

Human Emotion Estimation through Physiological Data with Neural Networks 

SoSE 

J. Gallardo, C. Savur, F. Sahin, and C. Kanan

2024

GRASP: A Rehearsal Policy for Efficient Online Continual Learning 

CoLLAs 

Md.Y. Harun, J. Gallardo, and C. Kanan

2024

SIESTA: Efficient Online Continual Learning with Sleep 

TMLR 

Md.Y. Harun*, J. Gallardo*, T.L. Hayes, R. Kemker, and C. Kanan

2023

How Efficient Are Today's Continual Learning Algorithms? 

CVPR-W 

Md.Y. Harun, J. Gallardo, T.L. Hayes, and C. Kanan

2023

System design for an integrated lifelong reinforcement learning agent for real-time strategy games

AI-ML Systems
2022

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, A. Raghavan

Self-Supervised Training Enhances Online Continual Learning

BMVC 
2021

J. Gallardo, T.L. Hayes, and C. Kanan

Detection of Diabetic Retinopathy Based on a CNN Using Retinal Fundus Images

ICANN 
2017

G. García, **J. Gallardo**, A. Mauricio, J. López, and C. Del Carpio

Multi-robot exploration and mapping strategy in underground mines by behavior control

MUSME
2014

A. Mauricio, A. Nieves, Y. Castillo, K. Hilaraca, C. Fonseca, **J. Gallardo**, R. Rodríguez, G. Rodríguez

* *Equal contribution*

Research Service

Reviewer: WACV 2026; AAAI 2025–2026; ICCV 2025; CoLLAs 2025; CVPR 2024–2025; CLVISION 2024–2025

Independent Projects

MRI Image Enhancement under Simulated Acquisition Degradation

- Developed an end-to-end MRI enhancement pipeline using a 2D U-Net to restore knee MRI images affected by simulated fast-acquisition degradation.
- Implemented DICOM preprocessing, case-level data splits, and quantitative evaluation using PSNR, SSIM, and MAE.