FIDEL OMAR TITO CRUZ

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EDUCATION

Universidad Nacional de Ingeniería (UNI) , Lima - Perú   *Aug 2016 - Jul 2021*
B.S. Mechatronics Engineering. Scholarship student - Beca Permanencia de Estudios PRONABEC
Upper fifth percentile. 1st place in third year and 2nd place in my second year of undergrad.

RESEARCH EXPERIENCE

PUBLICATIONS

[1] **F. Tito**, G. Bejarano, "Generative Interpolation of Sign Language Poses using RVQ-VAE" Proceedings of the LatinX in AI Workshop at the Neural Information Processing Systems Conference (NeurIPS) 2024, Vancouver, Canada.

[2] **F. Tito**, R. Doloriet, A. Guardia, J. Francia, "A comparison of Gain Scheduling PID and μ-Synthesis Robust Level Control for a Conical Tank System " Proceedings of the IEEE XXVIII International Conference on Electronics, Electrical Engineering and Computing (INTERCON) 2021, Lima, Perú.

[3] M. Nekoui, **F. Tito**, L .Cheng , "EAGLE-Eye: Extreme-posed Actions Grader with a detailed Look from the bird's-Eye view ". Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2021, Waikoloa, Hawaii, USA.

[4] M. Nekoui, **F. Tito**, L .Cheng, "FALCONS: FAst Learner-grader for CONtorted poses in Sports". Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops , 2020, Washington USA.

RESEARCH LABS

Vision and Learning Lab - Canada - Advisor: Dr. Li Cheng   *Jan 2020 - Apr 2020*
University of Alberta Research Experience Program (UARE) - Internship
Topic: Pose estimation for extreme poses. Keywords: pose estimation, Pytorch, computer vision, deep learning, object detection, STGCN, and image processing.

Research Lab Smart Machines - Advisor: Dr. Nicolas Oudart   *Sep 2017 - Aug 2019*
Centro de Tecnologías de la Información y Comunicaciones (CTIC) UNI
Topic: Cansat prototype, experimental rockets and stratospheric ballon. Keywords: Digital signal processing, interface development, and localization based on MPU sensor signals.

RESEARCH PROJECTS

Generative Interpolation of Sign Language Poses for SLP   *Jun 2024 - Present*
This research introduces a Residual Vector Quantized Variational Autoencoder (RVQ-VAE) model for interpolating 2D keypoint motion in videos, enabling the generation of realistic sign language sequences by reconstructing missing frames within a series of video keypoints.

Path Planning Algorithm for Indoor Navigation   *Oct 2020 - Aug 2021*
Worked in : Vicerrectorado de Investigacion (VRI) UNI
The project aimed to deploy a mobile robot for indoor navigation integrating perception and control modules using a Jetson Nano controller. I implemented a UNet-based perception module for image segmentation and DQN for optimized pathfinding.

Pose Estimation for Complex Sports Actions   *Jan 2020 - Nov 2020*
Worked in : University of Alberta Canada
The research aimed to develop a novel sports action quality assessment method by creating a human pose estimation module using a HRnet based model to analyze complex sports actions. It integrated visualization, annotation, and dataset creation tools, and a DiMP-based module.

Stratospheric Balloon Design and Implementation   *May 2018 - May 2019*
Worked in : Centro de Tecnologias de la Informacion y Comunicaciones (CTIC) UNI

The research aimed to implement a stratospheric balloon with weather sensors. I focused on sensor programming, signal processing, and creating a real-time interface to monitor the balloon's movement.

DATASETS CREATED
Human Pose datasets for contorted poses of a competitive sports activity. This includes 2D annotated images sourced from moving camera videos : **Expose Dataset** and **G-ExPose Dataset**

PROFESSIONAL EXPERIENCE

QUBIKA - ML Engineer Senior - Austin, Texas *Aug 2024 - Present*
- Development and deployment of deep learning projects

INTERCORP - ML Engineer - Lima, Perú *Sep 2022 - Jul 2024*
- Supervising ML deployment, using own MLOps framework for projects and API deployment, automating ML models via Kubeflow pipelines on Google Cloud Platform (GCP). A total of 8 projects have been deployed in production since 2023.
- Leveraging GenerativeAI for innovative analytics. Current project: Development of a text-to-SQL LLM-based using RAG system solution to enable clients without prior programming knowledge to analyze tables quickly
- Optimizing processes to enhance efficiency. Last project: Development of an accurate incremental sales calculation algorithm for big data, facilitating rapid comparison testing between groups using linear programming."

LEASEIN - Data Scientist - Lima, Perú *Oct 2021 - Aug 2022*
- Predictive models analysis. Last projects: Development of an automated client scoring evaluator that leverages variables to determine rental conditions. Development of an NLP-based resume screening program to reduce the time to determine candidate qualifications. - Automate processes. Last projects: Development of a program to send massive emails and whatsapp message to customers. Implementation of a data extraction program using RPA.

RABIT TECH - Developer and Educator - Lima, Perú *Apr 2021 - Sep 2021*
- Youth programming and robotics educator. Fostering STEM education among young minds, I taught programming and robotics courses to students aged 5-14.
- Web development. A virtual classroom was developed, using MERN stack.

ACHIEVEMENTS, HONORS AND AWARDS

- Fullbright scholarship for graduate studies, given by Fullbright *Jun 2024*
- Opportunity Funds scholarship, given by EducationUSA *Apr 2023*
- Financial award for research project, given by Vice-Rectorate Research UNI *May 2021*
- Selected by University of Alberta Research Experience Program (UARE) internship *Oct 2019*
- 2nd place, CSpace International Competition 2019 France - CANSAT Category. *Jul 2019*
- Scholarship - Beca Permanencia de Estudios 2018 given by PRONABEC *Sep 2018*
- 1st Place CONEIMERA 2018 - Robotics Competition, Micromouse Category *Sep 2018*
- 1st Place INTERCON 2018 - Robotics Competition, Micromouse Category *Jul 2018*
- Fully funded high school scholarship, given by Ministry of Education Perú *Feb 2013*

EXTRA-CURRICULAR ACTIVITIES

- Mentee on LatinX in AI Mentoring Program. Current member of LatinX in AI Community
- Vice Chair IEEE EMBS UNI 2020
- Participant in Serendipity Scientific Mentorship Program - 2019
- Volunteer at InspírateUNI 2017: Vocational orientation program for UNI applicants

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SKILLS

Python, C++, HTML, CSS, JavaScript, Pytorch, Tensorflow , OpenCV, Scikit Learn, React, ExpressJS, SQL, Big Data, Google Cloud Platform (GCP), Bigquery, Kubeflow, MLflow, Docker, Git, Kubernetes, LangChain, MongoDB, MATLAB, LaTeX

LANGUAGES

- English , Advanced Level - TOEFL iBT 97/120, TOEFL iBT MyBest 101/120
- Spanish , Native