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Alan Gabriel Romero Pacheco

Guadalajara,MX alanromero@tec.mx 55 8368 7858 alandgabriel alandgabriel

Personal Profile

Data Scientist specializing in signal and image processing, machine learning, and computer vision, with applications in medical imaging, video surveillance, IoT, and multimodal radar-vision systems. Passionate about innovation and technology transfer, I develop AI-driven systems to advance healthcare, smart cities, and urban analytics. My work focuses on extracting insights from complex data to improve decision-making in medicine and urban planning.

Education

MSc **UNAM**, Computer Science and Engineering – Mexico City Aug 2020 – Dec 2022
- Speckle tracking algorithm using deep learning

BSc **UAM**, Biomedical Engineering – Mexico City Aug 2015 – Nov 2019
- Association between the dynamics of heartbeat time series and breath time series in subjects with aortic valve disease

Tn **CETI**, Electronics and Communications – Guadalajara, Mexico Aug 2011 – June 2015
- My project won a science fair as the capstone project for all technological degree programs. It involved the development of a portable device for monitoring vital signs, with smartphone connectivity.

Experience

Research Specialist, Tecnológico de Monterrey – Guadalajara, Mexico Feb 2023 – present
- Lead the development of AI-driven systems that integrate edge computing, cloud computing, and computer vision models with web platforms to generate advanced analytics on urban spaces and traffic dynamics.
- Responsible for the automated construction and refinement of transportation networks using Python and VISUM for agent-based traffic microsimulation.
- Professor of Sofware Engineering and Medical Image Processing courses

Tutor, Coderhouse – Buenos Aires May 2022 – Aug 2023
- Tutorials in the area of Data Science, Data Analytics and Python.

Data Engineer, Grupo TI – Mexico City Feb 2022 – Jan 2023
- Develop ETL solutions for distributed system clusters, optimizing data pipelines for enterprise data warehouses.

Teacher's Assistant, UNAM – Mexico City Feb 2022 – Dec 2022
- Teach the practical part of the course of Quantum Computing and the course of Neural Networks

Software Engineer, Omedic – Mexico City May 2020 – Jan 2021
- Automate the sending of clinical laboratory results

Service Engineer, Viter Medical – Mexico City Dec 2019 – May 2020
- Install, train medical personnel, distribute, and maintain medical equipment in IMSS hospitals in the southeast region of Mexico.

Intern, Arroba Ingeniería – Mexico City May 2018 – Dec 2018
- Test and assemble prototypes of incubators for newborns

Projects

VisionCity Feb 2023 – present

A subscription-based platform for urban monitoring

- We have a subscription-based platform integrating computer vision for occupancy, trajectories, and activities, using existing surveillance cameras. The platform also incorporates custom environmental sensors, and we are developing a multimodal sensor (radar + vision) for analyzing urban space usage. With a TRL 4, our project aims to create healthy, sustainable, and successful urban spaces, with a growth projection as a startup, having already participated in incubators.

Traffic Conflict Analysis Apr 2024 – Aug 2024

Open web platform for traffic conflict analysis

- Developed a web platform for traffic conflict analysis, it involves the training of obb detectors and bird eye mapping to extract trajectories of vehicles
- The platform is made open-source, this is the web page and this is the repository

Speckle Tracking Algorithm using Deep Learning. Feb 2021 – Feb 2022

A novel algorithm for tracking speckle patterns in ultrasound images

- This project introduces a deep learning method for global longitudinal strain estimation in 2D echocardiograms, achieving high accuracy and stability. It outperforms state-of-the-art methods.
- This algorithm is made open-source (GitHub)

Association between the dynamics of heartbeat time series and breath time series in subjects with aortic valve disease Feb 2019 – Dec 2019

- This project find a lineal association between the scale exponent of the intervals between breaths time series and the scale exponent of the intervals between beats time series in healthy subjects that get lossed in subjects with aortic valve diseace.

Remote-Controlled Vital Signs Monitor Jan 2015 – June 2015

- Mobile-controlled device to monitor vital signs, displaying pressure, temperature, and heart rate using a microcontroller, Bluetooth, and sensors.

Skills

Programming: Proficient with Python, C++, and Git; good understanding of Web, app development, and DevOps

Mathematics: Good understanding of differential equations, calculus, and linear algebra

Languages: English (fluent, TOEFL: 118/120), Turkish (native)

Publications

Estimating Echocardiographic Myocardial Strain of Left Ventricle with Deep Learning Sept 2022

Alan Romero-Pacheco, Jorge Perez-Gonzalez, Nidiyare Hevia-Montiel

10.1109/EMBC48229.2022.9872008

Extracurricular Activities

- There are 7 unique entry types in RenderCV: *BulletEntry*, *TextEntry*, *EducationEntry*, *ExperienceEntry*, *NormalEntry*, *PublicationEntry*, and *OneLineEntry*.
- Each entry type has a different structure and layout. This document demonstrates all of them.

Numbered Entries

1. This is a numbered entry.

2. This is another numbered entry.
3. This is the third numbered entry.

Reversed Numbered Entries

3. This is a reversed numbered entry.
2. This is another reversed numbered entry.
1. This is the third reversed numbered entry.