

# MANUEL JOSUE MALLA CAMPOVERDE

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## EDUCATION

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### B.Sc. Information Technology

2022 - 2027

*Universidad Técnica de Machala*

*Machala, Ecuador*

Relevant courses: Programming fundamentals, Object Oriented Programming, Data structures, Databases fundamentals, Operating Systems, Advanced programming, Information Security, Software Engineer, Linear Algebra, Mathematical Analysis, Numeric Methods, Probability and Statics, Hardware platforms, Analog Electronics, Digital systems & Internet of things

### Summer Program

*Semester 2024-II*

*FGV Applied Mathematics School*

*Rio de Janeiro, Brazil*

Relevant Courses: The Machine Learning behind recommendation systems, Optimization methods in Julia, Complex networks applied in Epidemiology & Applied Bayesian Regression.

## WORK EXPERIENCE

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### Software Developer Intern

October. 2024 - Present

*Universidad Técnica de Machala, IT Department*

*Machala, Ecuador*

- Architecture Design of Intelligent Control Access and Security System (SISCA) for classrooms of Universidad Técnica de Machala Main Campus Faculties.
- Design of the mobile application used by Professors for classroom access.
- Optimized computational efficiency in real-time facial authentication using YOLOv8-Nano, reducing inference time for embedded hardware.
- Connection, programming, and installation of control hardware devices such as ESP32 and PN532 for classroom access with electric locks.

## OTHER PROJECTS

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### • MangroveNet: Mapping and Monitoring mangrove ecosystems based on U<sup>2</sup>-Net model using satellite images. (2024)

- Developed a deep learning model basen on U2-Net for mangrove segmentation using satellite imagery (Landsat 7, 8 & Sentinel-2).
- Implemented spectral indices (NDVI, NDWI, NDMI, MNDWI) to enhance classification accuracy.
- Preprocessed satellite data, removing noise (clouds, shadows) using CFMASK.
- Optimized U2-Net for multispectral segmentation with RGB, NIR, SWIR-1, and SWIR-2 bands.
- Evaluated model performance with accuracy, precision, recall, and F1-score metrics.
- Generated time-series maps (2010-present) for conservation and reforestation strategies.
- Optimized U2-Net for efficient computation in resource-constrained environments, leveraging multispectral processing.

### • SISCA: Intelligent Security & Access Control System. (2024 - 2025)

- Implemented multi-factor authentication via mobile app (Kotlin) with facial recognition (YOLOv8), fingerprint, or PIN.
- Developed a smart access control system using Mobile device, ESP32, NFC (PN532), Bluetooth, and electric locks.
- Integrated with the university's PostgreSQL database and existing infrastructure.
- Backend validation using PHP, ensuring secure communication and access logging.
- Optimized authentication via NFC (if available) or Bluetooth for mobile devices without NFC.
- Designed real-time logging of access events, enhancing security and administrative control.

- Designed an optimized authentication system leveraging embedded systems (ESP32, PN532) for efficient security control.

## VOLUNTEERING

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### Microsoft Student Ambassador

January 2024 - Present

*Microsoft*

Student Ambassadors are a global group of campus leaders who are eager to help fellow students, create robust tech communities and develop technical and career skills for the future.

- Learning about modern technologies used by Microsoft in the current state of the industry.
- Learning how to use and develop Artificial Intelligence services in Azure for the construction of innovative projects.

## AWARDS & HONORS

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- **Participation grant (TaReCDa/ReWARDS, Machala, Ecuador, 2023):** Selected to participate in Second Regional Workshop on Data Science Applications and Research with full grant.
- **Selected Research Proposal (TaReCDa/ReWARDS, Machala, Ecuador, 2023):** One of the ten teams selected to present a research proposal titled "Use of computer vision and convolutional neural networks for the detection and classification of critical areas for reforestation in mangrove ecosystems".
- **Selected Extended Abstract (LatinX in CV CVPR 2024, Seattle, USA):** Selected Extended Abstract titled "Mapping and Monitoring mangrove ecosystems based on U<sup>2</sup>-Net model using satellite images" to be presented in LatinX in Computer Vision Workshop in the Computer Vision and Pattern Recognition conference 2024.
- **Best presentation (LatinX in CV CVPR 2024, Seattle, USA):** Best presentation award in the undergraduate consortium track at the LatinX in Computer Vision Workshop in the Computer Vision and Pattern Recognition conference 2024.
- **Travel and registration Scholarship (Computer Vision Foundation, Seattle, USA, 2024):** Travel and registration grant to participate in person in the Computer Vision and Pattern Recognition conference 2024.
- **1st Place in UTMACH Challenge (Universidad Técnica de Machala, Machala, Ecuador, 2024):** Winning team with project proposal named Intelligent Security and Control Access System (SISCA) for benefiting the university infrastructure.
- **1st Place in Fall AI Project Competition (MLSA, 2024):** Winning team with project named "Wild-land Fire Azure AI" for Fall AI Projects competition of Microsoft Learn Student Ambassadors.
- **Travel and Accommodation Scholarship (FGV EMap, Rio de Janeiro, Brazil, 2025):** Travel and accommodation grant to participate in FGV School of Applied Mathematics Summer Program.
- **Participation Scholarship (KHIPU 2025, Santiago, Chile):** Accepted to participate in the KHIPU Latin American Meeting in Artificial Intelligence 2025 Conference in Pontificie Universidad Católica de Chile.

## TECHNICAL SKILLS

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<b>Programming</b>	Python, Java, JavaScript, TypeScript, C#, SQL, Julia
<b>Python Libraries</b>	Tensorflow, Pytorch, Sci-kit Learn, Pandas, Matplotlib
<b>Frameworks</b>	Django, NodeJs, ReactJs, AngularJs, Spring Boot, FastAPI, .NET, AstroJs
<b>Databases</b>	MySQL, PostgreSQL, SQL Server, MongoDB, Redis
<b>Software</b>	Linux terminal, Git/GitHub/GitLab, Jupyter Notebooks, Azure
<b>Mobile Development</b>	Android Studio, Kotlin
<b>Software Development</b>	Html, CSS, Htmx.
<b>IT Tools</b>	Docker, Kubernetes, Jenkins, GitLab Integrations, Azure DevOps