Carlos **Ibárcena**

MSC, COMUNICATION AND TRANSPORTATION ENGINEER

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Education

Northeast Forestry University   *Harbin, China*
PhD in Transportation Engineering (Expected to be completed Jun 2026)   *September 2022 - Currently*
- *Line of research:* Developing secure systems for autonomous vehicles
- *Supervisor:* Prof.

Harbin Institute of Technology   *Harbin, China*
MSC in Communication and transportation engineering   *Sep. 2020 - Apr. 2022*
- *Thesis title:* Traffic signs detection model against physical adversarial attacks
- *Supervisor:* Prof. Dr. Cheng Shaowu

Catholic University of Saint Mary   *Arequipa, Peru*
BA in Civil Engineering   *Mar. 2007 - Jan. 2012*
- *Thesis title:* Traffic signs detection model against physical adversarial attacks
- *Supervisor:* Prof. Olger Javier Febres Rosado

Projects and experience

UrbanVista: AI-Powered Synthesis of Imaginary Streets (Expected to be finished Jan 2024)
- *The endeavor is grounded in the utilization of a **traffic simulator** to generate annotated street images. These annotated images subsequently undergo conversion into a **computer vision** YOLO object detection model.*
- *The project uses several **texts to image models**, finetuned for realistic streets.*
- *The computational process is done in a cloud server, that is shown by a friendly **graphic interface to the user**.*

A single RGB Camera-Based project for Preventing "Dooring" Incidents (Expected to be finished Oct 2023)
- *The project uses computer vision models: **Object detection and depth estimator**.*
- *The project allows the final user to use it in a vehicle using **edge computing** and a **graphic interface** in a mobile phone.*
- *The project seeks to increase **vehicle** safety and can be deployed on commercial vehicles.*

Assistant: An AI virtual teacher application to auto-learn languages (2022)
- *Using AI technologies like **Whisper and Coqui** for voice-to-text and text-to-voice transformations.*
- *The project's focus is on language learning through voice interactions and **sentence similarity** to quantify the progress.*
- *It also hints at the project's multiple technological components, which include **docker, cloud computing, cloudflared, Anaconda (Python), and user interfaces via Gradio, Streamlit, and Telegram bot API**.*
- *https://github.com/procrastinando/Assistant*

Traffic signs detection model against physical adversarial attacks (2022)
- *Implemented advanced **computer vision** techniques, specifically utilizing YOLO (You Only Look Once), to enhance the mean average precision of a traffic sign detection model.*
- *The **python-based** project aimed to improve the model's effectiveness in recognizing signs despite potential **adversarial attacks** or environmental variations.*

Health Infrastructure Development and Maintenance: Consulting Engineer (2017)
- *Part of the contract **selection committee in private companies** with the government of Peru. Canteen design in prefabricated material for the workers. Maintenance of facilities. Maintenance of building structures.*

Transportation Engineering and Infrastructure Development: Consulting Experience (2017)
- *Highway Design and Management (100km Highway): **Managed a specialized project team** for the design of a 100km highway. Supervised in-situ construction activities. Led the development of geometric design, hydraulic reports, and structural reports. Use of **AutoCAD Civil 3D** to develop the project.*
- *Andes Irrigation Channel Project: Took on a pivotal role in designing an irrigation channel project in the Andes of Peru. **Conducted topographic surveys** and identified project requirements. Oversaw the application process for construction tenders.*
- *Craft Pier Design (Atico City): **Managed a team of specialists** for the design of a craft pier project in Atico City along the Peruvian coast. Facilitated personnel hiring and report preparation for the construction tender. Collaborated with the provincial government. Structural Maintenance and Budgeting*

Mining Pipeline and Road Maintenance Engineer (2014)

- ***Supervisor Engineer*** oversaw maintenance of mining pipelines and roads at Altamina mine, including a steel pipeline during stoppage.
- ***Aided in construction projects***: a student building at Universidad Andina Nestor Caceres Velasquez and assisted in road maintenance at the Provincial Municipality of Arequipa.

Skills

Programming	Python, Bash
OS and Software	Linux, Windows, AutoCAD, Civil 3D, Microsoft 365
Technology Expertise	Machine learning, Cloud Computing, Edge Computing, Containers
Multilingual Proficiency	Spanish (native), English (fluent), Chinese (intermediate)