Ulises Fernandez

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https://www.linkedin.com/in/ulisesfm/ | https://github.com/ulisesfm-py | Driving license

Education

Artificial Intelligence Professional Program

Stanford University

Sept 2023 – Present | Online

Professional Certificate: Program completion
XCS236: Deep Generative Models
XCS224N: NLP with Deep Learning
XCS229: Machine Learning

MSc in Aerospace Vehicle Design

Cranfield University

Oct 2017 – Sept 2018 | Cranfield, United Kingdom

Group Design Project: Advanced technology low drag airliner A-17 – aft fuselage design
Individual Research Project: Biomimetic analysis of a pterosaur wing and its UAV applications.

MSc in Aerospace Engineering

Polytechnic University of Catalonia

Sept 2016 – July 2017 | Barcelona, Spain

Group Design Project: Smartlink - Smart city planning using Copernicus sentinels.

BSc in Aerospace Vehicle Engineering

Polytechnic University of Catalonia

Sept 2011 – July 2016 | Barcelona, Spain

Group Design Project: Design and marketing planning of a home-built light aircraft.
Individual Research Project: Prototyping and fabrication study of a stowable rigid sail.

Work Experience

Structural Analyst

Bound4blue

Oct 2018 – May 2023 | Barcelona, Spain

At Bound4blue, I combined data analysis with engineering expertise to develop autonomous rigid sails for large vessels, aimed at reducing fuel consumption through wind-assisted propulsion.

- Analyzed historic wind and wave datasets using Python and satellite data (Copernicus) to estimate loading scenarios and predict performance based on the ship's route.
- Developed predictive models to forecast aerodynamic loads and structural stresses under various sea conditions.
- Automated design processes (from analytical to FEA) using Python scripts, reducing time and making design more reliable, uniform, and stable across the structural department.
- Collaborated with cross-functional teams to integrate data-driven insights into structural design.
- Conducted finite element analyses (FEA) and validated models against empirical data.
- Utilized version control systems (Git) and (PDM) for code and CAD management and collaboration.

Summary

Aerospace Engineer with 7 years of expertise in **structural design** and analysis of aerodynamic loads. Extensive experience in the maritime and energy industry, specifically in the new field of wind-assisted propulsion systems. Proficient in CAD modeling, analytical calculations, finite element analysis, and managing on-site fabrication. Strong foundation in **Python programming** for data analysis and automation in engineering applications. Currently focusing on **Machine Learning and AI**, aiming to add new tools to my design expertise. Eager to apply these cutting-edge skills in AI and machine learning to aerospace or structural analysis projects. Adept at working cross-functionally to drive innovation and efficiency in engineering solutions. Proficient in English, Spanish, and Catalan.

Skills

Supervised/Unsupervised learning | Deep Learning | NLP | Word Vectors | RNNs | Transformers | Autoregressive models | Variational Autoencoders | GANs | Kernels | Support Vector Machines

Software

- Python
- SQL
- AWS
- Scikit-learn
- Pytorch
- Tensorflow
- Git
- Django Framework
- ANSYS Mechanical
- Solidworks

Languages

- English
- Spanish
- Catalan
- French

Certificates & Courses

Complete Python Developer

Zero to Mastery

Aug 2023 | Online

Machine Learning and Data Science

Zero to Mastery

July 2024 | Online

Django Backend Framework Certificate

Code With Mosh

Jan 2023 | Online

Work Experience

Mechanical design engineer

Bound4blue

Feb 2015 – Nov 2016 Barcelona, Spain

In Bound4Blue we conceptualized, designed, and fabricated the first prototypes of the rigid sail and integrated them into multiple medium-sized vessels.

- Designed mechanical systems and primary structures of prototype rigid sails from concept to detail.
- Generated **complete CAD models of the prototypes in CATIA V5**.
- Managed materials procurement and conducted cost analyses using Excel and custom scripts in Python.
- Identified and resolved design and fabrication issues in collaboration with a multidisciplinary team.
- Prepared assembly procedures and technical drawings for workshop fabrication.
- Supervised on-site prototype construction, ensuring adherence to design specifications.

Certificates & Courses

A Hands-on Introduction to Engineering Simulation (ANSYS)

36 hour course

Nov 2018 CornellX

IELTS

Score : 8.0/9.0

Aug 2017

CATIA V5

45 hour course

July 2015 UPC, Barcelona

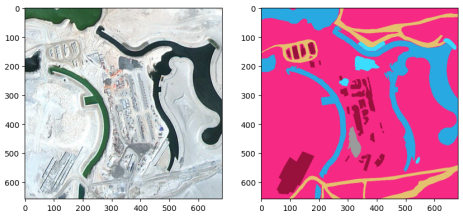
Patents

PATENT

Sail with aerodynamic profile and permutable leading and trailing edge: es WO2017186991A1

Apr 2016

Projects



Land Segmentation Classification
Kaggle, 2024 Dataset // Code
This project involved developing and comparing three distinct models — a U-Net neural network, a Logistic Regression model, and a Random Forest Classifier — for land segmentation classification using aerial imagery data from Kaggle. The project aimed to classify land use types such as water, land, roads, buildings, and vegetation by leveraging both deep learning and traditional machine learning methods. The U-Net model was trained with Categorical Focal Loss and optimized with GPU support for efficient computation. Meanwhile, LR and RF Classifiers were trained using pixel-wise data to benchmark performance against the U-Net model.

Esail 1-17: Amasus
Bound4Blue, 2023
Spearheading the innovation in maritime sail technology, the Amasus project presents the integration of two state-of-the-art 17-meter-tall rigid sails, enhanced by aspiration of the boundary layer. In my pivotal role, I was entrusted with the intricate task of designing the primary structure and the flap mechanisms. Additionally, I played a crucial part in defining the loads, ensuring both stability and efficiency in the project's execution.

Esail 1-21: Naumon
Bound4Blue, 2021
Taking maritime sail engineering to new heights, the Naumon project entailed the design and development of a majestic 21-meter-tall high-tech rigid sail. Serving in a central capacity, I oversaw the conception of the primary structure, the tilting mechanism, and the intricate flap mechanism. Beyond the design phase, I supervised the fabrication and integration stages, ensuring that the sail met the desired standards. My responsibilities also extended to estimating the complex loading scenarios, encompassing both aerodynamic and inertial forces.

Interests

Aerospace | Programming | Data Science | Hiking | Guitar