# Mariano I. Lizarraga Fernandez

(669) 254-7405 malife@gmail.com
www.linkedin.com/in/mariano-lizarraga


## RECENT PROFESSIONAL EXPERIENCE

**Engineering Leader – Amazon Robotics R&D**
**Period:** July 2024 - ongoing

- Lead an embdded software team developing safety-critical software for Amazon Robotics' next generation of safety-rated autonomous drive units.
- Work with Mechanical, Electrical, Functional Safety, and Test Engineering stakeholders to plan, develop, and deploy safety-cricital embedded software for hundreds of Proteus Drive Units across Amazon's fullfillment centers.

**Engineering Leader – Amazon Web Services HPC and Simulation Org**
**Period:** July 2023 - July 2024

- Led an AWS team of Data Scientists to launch a new product, focused on leveraging Machine Learning to speed up Computational Fluid Dynamics simulations.
- Worked across teams with Engineering, Product, Sales, and Go-to-Market stakeholders to define the strategy for this yet-to-launch product.
- Worked with Applied Scientists and CFD Subject matter experts to define the product's roadmap, including the definition of 5 key features for beta launch for 3 beta customers.

**Engineering Leader – Amazon Web Services SageMaker Ground Truth synthetic data**
**Period:** September 2021 - July 2023

- Led the Simulation Application team responsible for the synthetic data simulation, scenario generation, and game engine execution.
- Led the definiton and scoping of 80 user stories describing all the customer-facing features that comprised a major planned 2023 release, securing Product, Science, and Engineering stakeholders' signoff.
- Instituted four different mechanisms to improve the Simulation Application team's stack performance (by 30%) and reliability (by 12%) related to the technical designs review & signoff process, and adding rigor to unit, integration, and load testing for every code submission.
- Worked with Product, Engineering, and Science teams to scope, plan, and track the implementation of 38 features from inception to General Availability (at AWS re:Mars 2022) of the AWS SageMaker Ground Truth synthetic data generation service.

**Principal Application Engineer – MathWorks, Inc.**
**Period:** October 2015 - August 2021

- Co-developed with Engineering and Industry Marketing the go-to-market strategy to position and launch MathWorks' first Unmanned Aircraft-focused product: The UAV Toolbox.
- Worked with customers and Engineering to scope and define the three personas and five key workflows necessary for the UAV Toolbox's initial feature set (MVP).
- Developed three UAV-focused Model-Based Design reference applications shipping with MathWorks' products: Simulink Drone Reference Application, UAV Package Delivery, and I2C Magnetometer Driver Simulation and Code Generation.
- Led the technical investigation and resolution of 300+ escalated customer issues related to production code generation in C; providing first-customer contact within 24 hours of escalation.

**Mexican Navy's Unmanned Aircraft Program Lead – Mexican Navy Research and Development Institute**
**Period:** June 2012 - September 2015

- Led the Engineering team (3 teams, 32 overall) working as part of the UAS program.

- Owned and delivered the program strategy, roadmap, and resourcing plan for the Mexican Navy's 2013-2016 UAS program, working with stakeholders across the Mexican Navy to determine functional requirements, secure funding, and communicate progress for projects part of the UAS Program.
- Owned and deliver four key projects part of the UAS Program: (1) Military-grade UAS procurement, (2) In-house design and development of a Tier II Unmanned Aircraft, (3) A two-truck Mobile Ground Control Station, and (4) The creation of the Mexican Navy's first UAS Training Center
- Grew the program funding by 20% year-over-year, converting the UAS program in a program-of-record for the Mexican Navy by 2014.

**UAV Engineering Team Lead – Mexican Navy Research and Development Institute**
**Period:** January 2010 - June 2012

- Created and secure funding for the Autonomous Systems Laboratory.
- Hired and lead the engineering team (12 overall), developing a 2.5 meter wingspan electric UAV.
- Designed and implemented, in C, the navigation and inner loop control for the UAV's autopilot.
- Implemented in C a digital video stabilization algorithm on the ground station software.

## ENGINEERING SKILLS

- 10+ years of autonomous systems software development, HIL Simulation, and deployment testing.
- 10+ years working within cross-functional engineering teams.
- 8+ years of embedded systems software development.
- 10+ years of engineering leadership experience.

## EDUCATION

**University of California Santa Cruz – December 2009**
Ph.D. in Computer Engineering with the dissertation: "Design, Implementation and Flight Verification of a Versatile and Rapidly Reconfigurable UAV GNC Research Platform".

**U.S. Naval Postgraduate School, Monterey, CA – March 2004**
Dual Degree: Master of Science in Electrical Engineering & Electrical Engineer's Degree with the Thesis: "Autonomous Landing System for an Unmanned Aerial Vehicle".

## AWARDS & HONORS

**Mexican Navy's Presidential Commendation "For outstanding Research and Development Activities in the Unmanned Aircraft Space" – December 2011**
Awarded by President Felipe Calderon to certain individual for outstanding accomplishments during their service in the Mexican Navy.

**Naval Postgraduate School Academic Distinction – March 2004**
Awarded to the top 1% students who present outstanding research as part of their thesis.

## SELECTED PUBLICATIONS

**"Unmanned Aerial Vehicle Software Development Using Model-Based Design"**
M. Lizarraga, P. Kapur, and G. Ponnu. AUVSI XPONENTIAL Conference, Chicago, IL, 2019.

**"SLUGS UAV: A Flexible and Versatile Hardware/Software Platform for Guidance Navigation and Control Research"**
M.I. Lizarraga, R. Curry and G.H. Elkaim. In proceedings of the 2013 IEEE American Control Conference.

**"Flight Test Results for An Improved Line of Sight Guidance Law for UAVs"**
M.I. Lizarraga, R. Curry and G.H. Elkaim. In proceedings of the 2013 IEEE American Control Conference.

**"Simulink Based Hardware-in-the-Loop Simulator for Rapid Prototyping of UAV Control Algorithms"**
M.I. Lizarraga, V Dobrokhodov, G.H. Elkaim, R. Curry, and I. Kaminer. In Proceedings of the 2008 AIAA Infotech at Aerospace Conference.