# Fidel Echevarría

*Aerospace Engineer*

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https://fidelechevarria.github.io/
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Proactive aerospace engineer. Creative and agile problem solver, strongly motivated to teamwork. In continuous search of learning. Really interested in vehicle automation, computer vision, artificial intelligence and sustainable engineering.

## Experience

**since feb22**   **Navigation Systems Engineer**, *Airbus Defence and Space*, Madrid.

Working at Avionics centre of competence for light transport aircraft programs:
- Navigation systems design, integration, V&V, certification and qualification.
- Concept definition for airborne architectures for new and retrofitted navigation systems.
- Support to technical queries raised by aircraft operators and cross-domain departments.
- Participation in R&T projects related to GNSS-denied navigation technologies and the application of AI techniques for more precise IRS error characterization.

**jun16-feb22**   **Flight Control Engineer - Sensor Fusion**, *UAV Navigation*, Madrid.

Responsible for software development of state estimation solutions. Also leading research and development projects in the area of computer vision. Areas of work:
- Sensor fusion techniques for aircraft dynamic estimation (GNSS, ADS, IMU, MAG).
- Sensor calibration techniques.
- Computer vision systems for autonomous aircraft navigation.
- Simulation. Dynamics, kinematics, atmospheric perturbances.
- Flight control algorithms and logics.
- Preparation, revision and maintenance of test cases, requirements and technical documentation.
- Technical support for international clients and internal departments.
- Internship mentor for flight dynamics department.

**sep15-jun16**   **Flight Control Engineering Intern**, *UAV Navigation*, Madrid.

Involved in the development and validation process of several aircraft simulators and control systems.

## Education

**sep19-sep21**   **M.Sc. Research in Artificial Intelligence**, *Universidad Nacional de Educación a Distancia (UNED)*.

Key subjects: Bio-inspired neural methods, evolutionary computation, computer vision, perceptual and autonomous robotics, machine learning methods, research methodology for intelligent systems.

Thesis: *Artificial intelligence methods for identification of aerodynamic coefficients from flight data*.
Link: `https://fidelechevarria.github.io/MSc-Thesis.pdf`

**oct18-jun19**   **Self-Driving Car Engineering Nanodegree**, *Udacity*.

Key subjects: Deep learning, computer vision, sensor fusion, localization, model predictive control, optimal path algorithms, system integration (ROS).

**sep10-sep16**   **B.Sc. Aerospace Engineering**, *Universidad Politécnica de Madrid (UPM)*.

Key subjects: Mechanical design, flight mechanics, aerodynamics, fluid mechanics, thermodynamics, aerospace materials, structures, electronics, project management, aerospace propulsion.

Thesis: *Design of a Flight Control System Optimization Tool for Aerial Vehicles*.
Link: `https://fidelechevarria.github.io/BSc-Thesis.pdf`

## Languages

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|---|---|
| **Spanish** | Fluent. Mother tongue. |
| **English** | Fluent. CEFR Level C1 (2014). |
| **French** | Basic skills. CEFR Level A2 (2007). |

## Skills

**Experience fields.** Aircraft avionics systems, artificial intelligence, computer vision, numerical optimization, sensor fusion, automation and control, dynamic system simulation, data analysis, embedded software development, full stack web development, user interface design, graphical design, CI/CD, version control, entrepreneurship.

**Tools and technologies.** C/C++, Python, R, Fortran, Dart, JavaScript, HTML, MATLAB, Simulink, Tensorflow, Keras, OpenCV, Qt, Flutter, React, AWS, GCP, Latex, MS Office, Git, SVN, Linux, Bash, CATIA, SketchUp.

## Publications

**2020** F. Echevarría Corrales, J. M. Pulido Fernández and M. A. de Frutos Carro, "Efficient visual navigation applied to unmanned aerial systems in GNSS-denied environments," presented at the 8th Annu. National R&D Security and Defence Conf. (DESEi+d), León, Spain.

## Advising

**2023** J. V. González Calatayud. M. Sc. Thesis for Master's Degree in Aeronautical Engineering. Technical University of Valencia. "Study of vision based navigation for aircraft and an application for precision landing on unprepared runways". Performed in collaboration with Airbus Defence and Space. Honored with the first prize in the fourth edition of the Excellence in Engineering Internship Awards, by the Spanish Institute of Engineering, REDFUE and INECO.

**2019** F. J. González-Vico Puertas. B. Sc. Thesis for Bachelor's Degree in Industrial Technology Engineering. Technical University of Madrid. "Unmanned aerial vehicle (UAV) positioning using infrared machine vision". Performed in collaboration with UAV Navigation.

Link: `https://oa.upm.es/56813/1/TFG_FEDERICO_JOSE_GONZALEZ_VICO_PUERTAS.pdf`

## Projects

**since jul23** **Chattier.** Development of a software as a service web application which allows to generate intelligent chatbots for customer support. Chatbots are easily inserted into any website. It supports standard text chatbots as well as 3D avatars with speech capabilities.

Link: `https://chattier.dev/`

**feb21-jun23** **Lima.** Development of a Microsoft Windows application which allows control of the computer mouse cursor and keyboard by detected head movement, facial expressions and voice commands using a standard webcam. Conceived as an accessibility feature for people who are not able to use common human-computer interface devices, such as the mouse or keyboard.

Link: `https://apps.microsoft.com/detail/9PGL5GSN68JG`

**feb18-sep18** **Aircraft Trajectory Optimization.** Development of an analysis tool for estimation of optimal aircraft trajectories in air races. The tool is designed for use in Red Bull Air Race World Championship, and released as open-source software.

Link: `https://fidelechevarria.github.io/aircraft-trajectory-optimization`

## Additional Training

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| **2021** | **Avionics Ecosystem: DO-178C, DO-254 & ARP 4754A**, *AFuzion*, Vance Hilderman. |
| **2018** | **Python Courses**, *Packt Publishing*. |
| **2017** | **RPAS Pilot Certification**, *Cinetic Plus*, Madrid. |
| **2015** | **Advanced CATIA V5 Certification**, *ETSIAE (UPM)*, Madrid. |
| **2014** | **MATLAB Course**, *ETSIAE (UPM)*, Madrid. |