

# César DEBEUNNE

## PhD, Engineer | Post Doctoral Researcher

**in** [linkedin.com/in/cesardebeunne](https://www.linkedin.com/in/cesardebeunne)

☎ +33-603071059

@ [debeunnecesar@gmail.com](mailto:debeunnecesar@gmail.com)

📍 Current Location : Toulouse, France

📅 Born on May 22, 1997



## Professional Experiences

December 2024 -	<b>Post Doc, ISAE-Supaero, Toulouse</b> Development of an hybrid estimator based on vision and GNSS
November 2021 November 2024	<b>PhD Thesis, ISAE-Supaero / CNES, Toulouse</b> <ul style="list-style-type: none"><li>➢ Development of a lightweight indirect Visual Inertial SLAM for spatial applications</li><li>➢ Theoretical and practical work on marginalization and sparsification of a factor graph based SLAM</li><li>➢ Densification of a sparse map for traversability estimation</li><li>➢ Scale estimation for Visual SLAM with non overlapping FoV cameras</li></ul> Supervisor : Damien Vivet and Alex Torres
April 2021 October 2021	<b>Master Internship, LAAS-CNRS, Toulouse</b> <ul style="list-style-type: none"><li>➢ Contributing to a 6 DoF object pose estimator based on supervised learning : CosyPose</li><li>➢ Programming an object based Visual Inertial (monocular camera + IMU) SLAM system : CosySLAM</li></ul> Supervisor : Nicolas Mansard
September 2019 April 2021	<b>Research Course, ISAE-Supaero, Toulouse</b> <ul style="list-style-type: none"><li>➢ Journal writing of a state of the art review (Sensors)</li><li>➢ Programming a feature based LIDAR odometry framework on MATLAB</li><li>➢ Programming a C++ hybridized SLAM Camera/LIDAR</li></ul> Supervisor : Damien Vivet
September 2020 April 2021	<b>Research Project, LAAS-CNRS, Toulouse</b> <ul style="list-style-type: none"><li>➢ Assembly of SOLO-12, a quadruped robot by Open Dynamic Robot Initiative</li><li>➢ Programming a jump controller for SOLO-12</li></ul> Supervisor : Thomas Flayols
September 2019 June 2019	<b>Mathematics oral examiner, Lycée Saliège, Toulouse</b> <ul style="list-style-type: none"><li>➢ Oral examiner for preparatory students</li><li>➢ Classes : PCSI/PTSI</li></ul> Teacher : Arnaud Begyn
March 2019 August 2019	<b>Werkstudent, Valeo, Kronach (Germany)</b> <ul style="list-style-type: none"><li>➢ Setting a benchmark for the "trained parking" functionality</li><li>➢ GNSS and visual odometry data analysis</li><li>➢ Programming a MySQL database to automatize the validation process</li></ul> Supervisor : Dr.Eugen Wige

## Education

2021-2024	PhD in Informatics and Telecommunications ISAE-SUPAERO - Toulouse (31)
2017-2020	Engineering School ISAE-SUPAERO - Toulouse (31), major in signal processing, minor in robotics
2015-2017	Preparatory School, classes PCSI/PC, Lycée Privé Sainte Geneviève - Versailles (78)
2015	Scientific Baccalaureate, Institution Libre de Marcq-en-baroeul (59), mention "Très Bien"

## Competences

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**Programming :** C, C++, Java, Python, Matlab, ROS, git  
**Languages :** English (C1), Spanish (B1), German (A2), Chinese (A2)  
**Hobbies :** Cycling, Mountaineering, Guitar

## Publications

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### Journal Paper

César Debeunne, Damien Vivet. "A review of visual-LiDAR fusion based simultaneous localization and mapping". In : *Sensors*. Vol. 20, 7, 2020

César Debeunne, Alex Torres, Damien Vivet. "SaDVIO : Sparsify and Densify VIO for UGV Traversability Estimation". In : *IEEE Robotics and Automation Letters*. Vol. 9, 10, 2024

### International Conference Papers

César Debeunne, Damien Vivet, Alex Torres. "Design of a bi-monocular Visual Odometry System for Lava Tubes exploration". In : *PNARUDE Workshop IEEE/RSJ International Conference on Intelligent Robots and Systems*. 2022

César Debeunne, Joan Vallvé, Alex Torres, Damien Vivet. "Fast bi-monocular Visual Odometry using Factor Graph Sparsification". In : *IEEE/RSJ International Conference on Intelligent Robots and Systems*. 2023

César Debeunne, Damien Vivet, Alex Torres. "Non-Recovering Field-of-View Imaging-Based SLAM for Lava Tubes Exploration". In : *17th Symposium on Advanced Space Technologies in Robotics and Automation*. 2023