

Cristian Rendón



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About Me

Research-driven Engineer with expertise in optical systems, computational mechanics, and hardware prototyping. Brings hands-on experience in simulation, CAD/CAM, and system development, supported by degrees in Mechanical Engineering and an MSc in Engineering. Currently pursuing a PhD in Computer Science focused on optical systems for enhanced human vision, with advanced skills in optical design, free-form optics, and prototyping.

Skills

Optics Optical Design, Computational Optics	Back-end Node.js, REST API
CAD Onshape, FreeCAD, Blender	Front-end Javascript, CSS, HTML, Angular
Coding Python, Matlab, OpenCV	Languages English, Spanish, French

Education

Université Paris-Saclay <i>PhD in Computer Science</i>	<i>Oct 2022 – present</i>
Universidad EAFIT <i>MSc in Engineering</i>	<i>Sept 2020 – Sept 2022</i>
Universidad EAFIT <i>BSc in Mechanical Engineering</i>	<i>Jan 2015 – July 2020</i>

- **Minor:** Computational Mechanics

Experience

PhD in Computer Science <i>Augmented Reality & Artificial Intelligence (ARAI) Team</i> 🔗 , Paris-Saclay University	<i>Orsay, FR</i> <i>Oct 2022 – present</i>
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- Development of a novel optical system to enhance human vision, with applications in augmented vision, adaptive optics, and computational optics.
- Expertise in the design of optical systems involving Spatial Light Modulators (SLMs) and free-form optics, with simulations in Code V.
- Hands-on experience in hardware prototyping using 3D printing and mechanical design in Onshape CAD.
- Collaborating with experts in computer graphics, ophthalmology, and optics to build an interdisciplinary solution

PhD Visitor <i>User Interface Research Group</i> 🔗 , The University of Tokyo	<i>Tokyo, JP</i> <i>May 2025 – July 2025</i>
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- Collaboration focused on experimental validation and prototyping of Virtual Reality applications of Optical Systems.

Computer Geometry Engineer <i>Cohesive Manufacturing</i> 🔗	<i>Medellin, CO</i> <i>Apr 2021 – May 2025</i>
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- Led the development of computational geometry technologies using JavaScript, Node.js, and Angular.
- Key contributor to the company's 3D viewer, creating a reusable Angular library for seamless project integration.
- Collaborated with designers and clients to deliver tailored web applications for digital manufacturing.
- Co-authored a research paper on primitive geometry identification, published in MDPI with Universidad EAFIT.

Researcher <i>CAD CAM CAE Laboratory</i> 🔗 , EAFIT University	<i>Medellin, CO</i> <i>July 2017 – Sept 2022</i>
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- Conducted research in Computational Geometry, Mechanics, Fluid Dynamics, and Dynamic Systems.
- Worked on projects optimizing wing profiles for maximum lift using CFD simulations and conducted experimental fluid dynamics research on skin friction in turbulent flows.
- Co-developed a technology for identifying primitive geometries in poorly faceted meshes, implemented in industry with Cohesive Manufacturing.
- Used Matlab, JavaScript, Ansys, and LaTeX for simulations and article writing. Teaching Assistant for "Introduction to CAD/CAM."

Researcher <i>Walter Bassett Aerodynamics Laboratory</i> 🔗 , The University of Melbourne	<i>Melbourne, AU</i> <i>Jan 2019 – July 2019</i>
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- Assisted in the project "Active Control of Large-scale Structures in High Reynolds Number Turbulent Boundary Layers," post-processing Particle Image Velocimetry (PIV) and hot-wire anemometry data.
- Developed expertise in turbulent boundary layers, PIV, hot-wire and hot-film anemometry, and signal analysis.
- Produced a research article in partnership with CAD/CAM/CAE Laboratory from Universidad EAFIT.

Publications

- Cristian Rendon-Cardona, Jorge Correa, Diego A. Acosta, Oscar Ruiz-Salguero. Analytic Form Fitting in Poor Triangular Meshes. *Algorithms*, 14(11): 304-331, October 2021. DOI: [10.3390/a14110304](https://doi.org/10.3390/a14110304)
- Cristian Rendon-Cardona, Zhoushun Ruan, Oscar Ruiz-Salguero. Skin-friction Measurements in Turbulent Boundary Layers. *International Journal of Engineering and Technology*, 12(1): 1-15, February 2020. DOI:[10.3390/a14110304](https://doi.org/10.3390/a14110304)
- Cristian C. Rendon, José Hernandez, Oscar Ruiz-Salguero, Carlos A. Alvarez, Mauricio Toro. Wing profile evolution driven by computational fluid dynamics. *UIS Ingenierías*, 18(2): 139-149, January 2019. DOI: [10.18273/revuin.v18n2-2019013](https://doi.org/10.18273/revuin.v18n2-2019013)