Cristian Rendón

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About Me

Research-driven engineer with a strong foundation in optical systems, simulation, and full-stack prototyping, spanning hardware and software. Proficient in CAD/CAM, system modelling, and algorithm development, with academic credentials in Mechanical Engineering (BSc, MSc) and currently completing a PhD in Computer Science focused on vision-enhancing optical technologies.

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

Experience

PhD in Computer Science — *Orsay, FR*
Augmented Reality & Artificial Intelligence (ARAI) Team, *Paris-Saclay University* — *Oct 2022 – present*

- 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

Computer Geometry Engineer — *Medellin, CO*
Cohesive Manufacturing — *Apr 2021 – Sept 2022*

- 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 — *Medellin, CO*
CAD CAM CAE Laboratory, *EAFIT University* — *July 2017 – Sept 2022*

- 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 — *Melbourne, AU*
Walter Bassett Aerodynamics Laboratory, *The University of Melbourne* — *Jan 2019 – July 2019*

- 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.

Education

Université Paris-Saclay — *Oct 2022 – present*
PhD in Computer Science

Universidad EAFIT — *Sept 2020 – Sept 2022*
MSc in Engineering

Universidad EAFIT — *Jan 2015 – July 2020*
BSc in Mechanical Engineering

- **Minor:** Computational Mechanics

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
- 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
- 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