Sergio Velarde Gomez

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https://servelarde.github.io/

Education

2023 **Universidad Tecnológica de Pereira** - PEI, Colombia
PhD in Engineering
Advisor: Eduardo Giraldo
Current Coursework: Control systems, electric machines, electric mobility, 3D modeling, 3D printing, permanent magnet synchronous machine, finite elements analysis

2020 - 2022 **Universidad Tecnológica de Pereira** - PEI, Colombia
MSc in Electrical Engineering
Supervisors: Eduardo Giraldo and Alexander Molina
GPA: 4.8/5.0 **Final grade**: Merit
Main Coursework: Control systems, data science, statistics, programming (Python), electric machines, 3D modeling, 3D printing, computational methods, dynamic systems

2009 - 2017 **Universidad Tecnológica de Pereira** - PEI, Colombia
BSc in Electrical Engineering
GPA: 4.0/5.0
Main Coursework: Control systems, programming (MATLAB), 3D printing, power generation systems, electric machines, electric circuits and electronics, automation

2002 - 2008 **Instituto Técnico Superior** - PEI, Colombia
High school degree with emphasis in Mechatronics
Main Coursework: Academics, electricity and electronics, relays and automation

Experience

2022 - 2023 **UTP Faculty of engineering**
Diploma Teacher
Diploma in 3D printing and new technologies, 90 hours

2022 - Present **UTP Automatic Control Research Group (GCA)**
Research Assistant. Advisor: Eduardo Giraldo
Designing physical systems for control, starting from 3D modeling and 3D printing. I am currently focused on the construction of permanent magnet synchronous machines (PMSM) to evaluate their performance and future implementation in robotic systems, electric mobility, power generation, and aerospace applications

2020 - Present **UTP Electrical Engineering Program**
Head of Laboratories
To guarantee the correct development of teaching and research practices, execute plans to update equipment and class guides, enforce laboratory safety standards, and promote the activities of the student chapters and seedbed groups in the laboratories

2020 - Present **UTP Electromagnetic Fields and Energetic Phenomena Research Group (CAFE)**
Research Assistant. Advisor: Alexander Molina
Leading research and construction of electrical devices using emerging manufacturing techniques such as 3D printing. I focus on conducting classes and lectures for undergraduate and master's students required to create hardware prototypes

2018 - 2020 **UTP Electrical Engineering Curricular Committee**
Graduates Representative
As a representative of the graduates, I permanently attended the meetings for the curricular improvement of the program, updating the Program Educational Project (PEP), and I also participated in the national and international accreditation processes like EUR ACE and ARCU SUR

Publications & Working Papers

2021 Guarin, S.,**Velarde, S.**, Castaño, E., & Molina-Cabrera, A. *Construction and simulation of a planar transformer prototype*.Transactions on Energy Systems and Engineering Applications, 2(2), 1–7. https://doi.org/10.32397/tesea.vol2.n2.1

2023 **Velarde, S.**, Giraldo, E. & Molina-Cabrera, A. *Model-based adaptive control of a 3D printed permanent magnet synchronous motor*, under review

Velarde, S., Giraldo, E. *Robust state space embedded control of a 3D printed permanent magnet synchronous motor*, under review

Conferences

2022 **V Updating Seminar on Electrical Systems (SASE).** Pereira, Colombia. *"Design, construction, analysis and control of a 3D printed permanent magnet motor prototype"*

2018 **Power Electronics for Renewable Energy Systems Applications.** Curicó, Chile. *"Brief introdution and active projects in IEEE Control System Society (CSS) UTP Student Branch Chapter"*

Honors

2022 **Award: First Round of Private Investment Barranqueros UTP.***+40 hours of consulting with recognized entrepreneurs in the region for the successful creation of a start-up from the winning idea*

2020 - 2022 **Scholarship: Master's degree discount.***Semester payment discount for high undergraduate GPA*

2009 - 2017 **Scholarship: Honorable mention in several undergraduate semesters.** *Full discount for semester payment due to high GPA, 5/10 semesters*

Leadership, Mentorship & Extra-Curricular Activities

- *Webmaster and first student member*, IEEE Control Systems Society (CSS) UTP student branch chapter
- *Student founder*, IEEE Aerospace and Electronic Systems Society (AESS) UTP student branch chapter
- *Student founder*, IEEE Robotics and Automation Society (RAS) UTP student branch chapter
- *Active member*, Colombian Association of Engineers (ACIEM), Sectional Risaralda
- *Co-founder member*, Makers Colombia, A non-profit organization for the diffusion of open source projects in Colombia
- *Interests:* table tennis, cycling, formula 1, photography, reading, watching movies, amateur cooking, memes

Skills

- *Softwares and tools:* Onshape, Fusion 360, 123D Design, FreeCAD, PrusaSlicer, Adobe Photoshop, Adobe Illustrator, Adobe Lightroom, Inkscape, Notion, GitHub
- *Programming languages:* Python (basic), MATLAB (basic), C/C++/C# (basic), LaTex (proficient)

Theory: Electric machines, 3D printing, 3D modeling, automatic control

- *Languages:* English (fluent), Spanish (native)