

Dr. Jesus Mendoza Avila

Personal Data

- Date of birth: December 14th, 1991.
- Place of birth: Tepalcingo, Morelos, Mexico.
- Citizenship: Mexican.
- Private address: 58 Avenue du Président JF Kennedy, 59000, Lille, France.
- Phone number: +33 0766161872
- E-mail: Jesus.Mendoza-Avila@inria.fr
- Current employment:
 - Post-doctorant,
 - Team Valse, Inria Lille-Nord Europe,
 - Date of beginning: December 1st, 2021,
 - Advisor: Dr. Denis Efimov.
- Employment address: Parc Scientifique de la Haute Borne, 40 Avenue Halley, Bat A, Park Plaza, 596500 Villeneuve d'Ascq, France.

Diplomas

- 2015. Bachelor in Electrical and Electronics Engineering. Universidad Nacional Autónoma de México. Mexico.
- 2017. Master in Electrical Engineering (Control). Universidad Nacional Autónoma de México. Mexico.
- 2021. Doctorate in Electrical Engineering (Control). Universidad Nacional Autónoma de México. Mexico.

Competencies and Skills

My attitudes include responsibility, teamwork, respect, resilience and commitment to society and the environment.

Professionally, I have experience in automatic control systems, Lyapunov stability, Homogeneity, and Sliding Modes Control design. At this moment, I am working on the design of continuous higher-order sliding mode controllers, analysis of the stability of homogeneous systems in presence of parasitic dynamics, and Lyapunov function design for homogeneous and discontinuous systems.

I have experience in academic writing and my results have been reported in one book chapter, four journal papers, and eight conference contributions. Moreover, I have participated as a speaker in six conferences. Additionally, I have some knowledge of power systems, electronics, instrumentation, and programming.

Professional Interests

I have a great interest in science, technological development, and research in engineering issues, especially I focus my attention on control engineering: nonlinear system, robust control, and sliding mode control design. I would like to participate in a research project with a significant impact on

society and the environment. Moreover, I want to collaborate with international colleagues to increase my experience and my professional contacts. Furthermore, I need to expand my list of publications and continue participating in international conferences.

Publications

General overview

Book chapters – 1

Journal papers – 4

Conference papers – 8

Book chapters

- **Mendoza-Avila J.**, and Castillo, I., Higher Order Sliding Mode Stabilization of Inverted Cart-Pendulum, in: *The Inverted Pendulum: From Theory to New Innovations in Control and Robotics*, Olfa Boubaker, Rafael Iriarte (Eds.), IET, London, 2017, pp.71-91.

Journal papers

- **Mendoza-Avila, J.**, Moreno, J. A., and Fridman, L. (2020). “Continuous Twisting Algorithm for Third Order Systems”. *IEEE Transaction on Automatic Control*, 65(7), 2814-2825, doi: 10.1109/TAC.2019.2932690.
- **Mendoza-Avila, J.**, Efimov, D., Ushirobira, R., and Moreno, J. A. (2021). “Numerical design of Lyapunov functions for a class of homogeneous discontinuous systems”. *International Journal of Robust and Nonlinear Control*, 31(9), 3708-3729, doi: <https://doi.org/10.1002/rnc.5478>.
- Pérez-Ventura, U., **Mendoza-Avila, J.**, and Fridman, L. (2021). “Design of a proportional integral derivative-like continuous sliding mode controller”. *International Journal of Robust and Nonlinear Control*, 31(9), 3439-3454, doi: <https://doi.org/10.1002/rnc.5412>.
- Wang, J., **Mendoza-Avila, J.**, Efimov, D., Aleksandrov, A., and Fridman, L. (2021). “Conditions of self-oscillations in generalized Persidskii systems”. *IEEE Transaction on Automatic Control*, doi: 10.1109/TAC.2021.3066581.

Conference papers

- **Mendoza-Avila, J.**, Castillo-López, A. I., and Fridman, L. (2015, October). “Control de un carro-péndulo vía superficies y controladores continuos por modos deslizantes de orden superior”. In 2015 AMCA *Congreso Nacional de Control Automático (CNCA)*, (pp. 411-416). AMCA. Available: http://amca.mx/memorias/amca2015/articulos/0075_JuBT3-03.pdf.
- **Mendoza-Avila, J.**, Castillo-López, A. I., and Iriarte, R. (2017, July). “Higher Order Sliding Mode Stabilization of an Inverted Cart-Pendulum System”. In *20th IFAC World Congress 2017* (pp. 7157-7162). IFAC.
- **Mendoza-Avila, J.**, Moreno, J. A., and Fridman, L. (2017, December). “An Idea for Lyapunov Function Design for Arbitrary Order Continuous Twisting Algorithm”. In 2017 *IEEE 56th Annual Conference on Decision and Control (CDC)* (pp. 5426-5431). IEEE.
- Estrada, M. A., **Mendoza-Avila, J.**, Moreno, J. A., and Fridman, L. (2017, October). “Homogeneous Control and Higher Order Stabilization of a Reaction Wheel Pendulum System”. In *2017 AMCA Congreso Nacional de Control Automático (CNCA)*. AMCA.

- **Mendoza-Avila, J.**, Moreno, J. A., and Fridman, L. (2018, July). “Adaptive Continuous Twisting Algorithm of third order”. In *2018 15th International Workshop on Variable Structure Systems (VSS)* (pp. 144-149). IEEE.
- **Mendoza-Avila, J.**, Moreno, J. A., and Fridman, L. (2019, October). “Control homogéneo no-lineal para estabilización en tiempo-finito de sistemas de alto orden”. In *2019 AMCA Congreso Nacional de Control Automático (CNCA)* (pp. 103-108). AMCA.
- **Mendoza-Avila, J.**, Efimov, D., Moreno, J. A., and Fridman, L. (2020, July). “Analysis of singular perturbations for a class of interconnected homogeneous systems: input-to-state stability approach”. In *21st IFAC World Congress 2020*. IFAC.
- Wang, J., **Mendoza-Avila, J.**, Efimov, D., Aleksandrov, A., and Fridman, L. (2020, July). “On existence of oscillations in Persidskii systems”. In *21st IFAC World Congress 2020*. IFAC.

Impact of my research

Research gate Score >11

Citations

Google Scholar: 39, Index h = 2

Research gate: 36, Index h = 2

Invitations for standings of research

France: INRIA Lille-Nord Europe (2018, 2019)

Languages

Spanish (native speaker)

English (advanced level)

References

Dr. Leonid Fridman

Professor, Facultad de Ingeniería, UNAM

lfridman@unam.mx

Dr. Jaime A. Moreno

Professor, Instituto de Ingeniería, UNAM

JMorenoP@ii.unam.mx