MARTÍN HERNÁNDEZ SALINAS

Mathematical Engineering and Master of Science, Mathematics Mention from the Technical University Federico Santa María, Chile. Currently, I am a PhD student at the Friedrich-Alexander-Universität Erlangen-Nürnberg in Germany. Independent researcher and professional with solid analytical capacities and skills to solve different problems related to engineering and mathematics.

CONTACT

- ✉ martin.hernandez@fau.de
- ☎ +491747896958
- ◉ Erlangen, Germany
- ⌂ dcn.nat.fau.eu/martin-hernandez/
- ◉ @Martinshs
- in Martín Hernández

SKILLS

Programming
Python ●●●●●
MATLAB ●●●○○
C ●●○○○
Office ●●●○○
LaTeX ●●●○○
Tableau ●●●○○
ACL ●●○○○

Python libraries
Visualization ●●●●○
(Matplotlib, Altair)
Data Analysis ●●●○○
(Pandas, Spark)
Mathematics ●●●●○
(Numpy, Gekko, Scipy, Fenics/Dolfin)
Machine Learning ●●●●○
(Pytorch, Tensorflow, sklearn, scikit-learn)

Languages
Spanish ●●●●●
English ●●●●○
Portuguese ●●●○○

RESEARCH INTERESTS

- Control Theory
- Partial Differential Equations
- Optimization
- Programming
- Numerical Analysis
- Ordinary Differential Equations
- Machine Learning
- Deep Neuronal Network

🎓 EDUCATION

📅 09/2021 - Actual
◉ Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
Dr. rer. nat. Student

📅 03/2019 - 03/2021
◉ Technical University Federico Santa María, Valparaiso
Master of Science, Mathematics Mention

📅 03/2015 - 03/2021
◉ Technical University Federico Santa María, Valparaiso
Mathematical Engineer

HONORS & AWARDS

- 🏆 (2016 - 2021) Honor roll member of the Technical University Federico Santa María. Student belonged to the USM Honor Roll, whose members by academic performance are located within the top 10% of students taking subjects
- 🏆 Mathematical Engineering degree with Highest Distinction (Maximum score in defense of thesis).
- 🏆 M.S. degree with Highest Distinction (Maximum score in defense of thesis).

⚙ TEACHING EXPERIENCE

📅 03/2021 - 12/2021
◉ UTFSM, Valparaiso
Teacher of Mathematics Department.
Part Time Teacher

📅 03/2018 - 12/2020
◉ UTFSM, Valparaiso
Exercise Teacher of eight courses related with Differential/Integral Calculus, Ordinary/Partial Differential Equations.
Exercise Teacher

⚙ PROFESSIONAL EXPERIENCE

📅 12/2022 - 06/2025
◉ TRR154 subproject C07, Germany.
Analysis of gas transport models, numerical implementations and random decomposition.
Associated Ph.D. student

📅 02/2021 - 02/2022
◉ Deloitte Spa. Santiago
Specialist in financial risk models, statistics models and programming.
Analyst in Financial Risk

📅 01/2020 - 03/2020
◉ Itaú Bank, Santiago
Analysis and data visualization using ACL and Tableau software.
Internal Audit area.
Analyst (intern)

📅 01/2019 - 03/2019
◉ Deloite Spa, Santiago
Estimation of provisions using the International Financial Reporting Standard.
Financial Rick area.
Analyst (intern)

FUNDING

ACTIVITIES

- 01/2025 Talk at Technical University of Darmstadt, and visit to Prof. Jan Giesselmann.
- 01/2025 Lecturing at Universidad Federal Fluminense, Brazil, and visiting Prof. Juan Límaco.
- 12/2024 Talk at Humboldt University of Berlin, and visit to Prof. Falk Hante.
- 11/2024 Attendance to Oberwolfach Seminar: Control and Machine Learning, Germany.
- 26/08/2024 Talk in X Partial differential equations, optimal design and numerics, Benasque, Spain.
- 23/08/2024 Talk in X Partial differential equations, optimal design and numerics, Benasque, Spain.
- 19/08/2024 Talk in X Partial differential equations, optimal design and numerics, Benasque, Spain.
- 06/2024 Lecturing in EECI-IGSC 2024: Control and Machine Learning (M18), Dubrovnik, Coatia.
- 05/2024 Lecturing in the ML&OC24: Machine Learning and Optimal Control summer school, Gaeta, Italy.
- 11/2023 Attendance to the Workshop: Scientific Writing, Darmstadt, Germany.
- 11/2023 Visit to Professor M. Lazar for a week at the University of Dubrovnik, Croatia.
- 10/2023 Visit to the University of Deusto in Spain for a week together with Prof. Falk Hante from the Humboldt-Universität zu Berlin.
- 08/2023 Talk in the 10th International Congress on Industrial and Applied Mathematics (ICIAM), Tokyo.
- 02/06/2023 Talk in the 93rd Annual Meeting of the International Association of Applied Mathematics and Mechanics (GAMM), Germany.
- 01/06/2023 Talk in the 93rd Annual Meeting of the International Association of Applied Mathematics and Mechanics (GAMM), Germany.
- 05/2023 Talk in the "Orientierungswoche" for first-year students of the Data Science Department at FAU, Germany.
- 11/2022 Attendance to the workshop in Good Scientific Practice, Bamberg, Germany.
- 09/2022 Talk in the 25th International Symposium on Mathematical Theory of Networks and Systems, Germany.
- 08/2022 Talk in the IX Partial differential equations, optimal design, and numerics, Spain.
- 08/2022 Talk in the IX Partial differential equations, optimal design, and numerics, Spain.
- 04/2022 Talk in South Zone Mathematics Conference, Chile.
- 01/2022 Attendance to the workshop of the annual scientific event AIMS-Cameroon Mathematics and its Applications Meeting (ACMAM).
- 01/2022 Attendance to rhetoric workshop Online (second part). Funded by the TRR154 project.
- 11/2021 Workshop on Non-Linear Analysis and Control Theory in honor of Prof. Enrique Zuazua, Universidad de Chile, Chile.
- 10/2021 Attendance to rhetoric workshop, Berlin, Germany. Funded by the TRR154 project.
- 04/2021 Attendance to the workshop Deep Learning with MATLAB, for GMU CMAI and FAU MOD by the MathWorks.
- 04/2021 Attendance to South Zone Mathematics Conference, Chile.
- 04/2021 Deep Learning online course at Coursera.
- 10/2020 Attendance to doctorate school, UC, Chile.
- 08/2020 Attendance to the online course of introduction to moments method for Control of PDEs, UFPB.
- 2019-2020 Member of the student council of Sciences, an organization that groups five careers of the Technical University Federico Santa María, which is in charge of the student representation.
- 2016-2019 Attendance to the National Encounter of Mathematical Civil Engineers, Chile.
- 03/2019 Attendance at the workshop of scientific diffusion and communication, UTFSM, Chile.
- 01/2018 - 03/2018 Attendance to the summer school at Instituto de matemática pura e aplicada (IMPA).

PUBLICATIONS

Averaged turnpike property for differential equations with random constant coefficients.

👥 **Martín Hernández, Rodrigo Lecaros and Sebastián Zamorano**

📅 2023   📰 Mathematical Control and Related Fields   🔗 AIMS

Uniform Turnpike Property and Singular Limits.

👥 **Martín Hernández and Enrique Zuazua.**

📅 2024   📰 Acta Applicandae Mathematicae   🔗 springer

Mini-batch descent in semiflows.

👥 **Martín Hernández and Alberto Dominguez-Corella.**

📅 2025   📰 ESAIM-COCV   🔗 COCV

PREPRINTS

Averaged observations and turnpike phenomenon for parameter-dependent systems

👥 **Martín Hernández, Martin Lazar, Sebastián Zamorano.**

📅 2024   📰 Preprint   🔗 arXiv:2404.17455

Multi-Classification and Universal Approximation Using Deep Neural Networks.

👥 **Martín Hernández and Enrique Zuazua.**

📅 2024   📰 Preprint   🔗 arXiv:2409.06555v1

IN PREPARATION

Random Batch Methods for PDE control on graphs.

👥 **Martín Hernández and Enrique Zuazua.**

📅 2025   📰 Preprint

Random domain decomposition for parabolic PDEs.

👥 **Martín Hernández.**

📅 2025   📰 Preprint

A mathematical framework for dropout in neural ODEs via random batch methods.

👥 **Martín Hernández and Antonio Álvarez-López.**

📅 2024   📰 Preprint