# Daniel Montes

## Curriculum Vitae

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## Personal Information

Date of birth: November 8, 1995
Nationality: Colombian

## Education and Qualifications

2017 **Bachelor in Chemical Engineering**
*Modeling and simulation of a twelve-cell continuous sugar crystallizer.*
National University of Colombia

2020 **M.Sc. in Chemical Engineering**
*Implementation of non-linear MPC and RTO in a hybrid reactor pilot plant.*
University of Valladolid

2020-2024 **Ph.D. in Industrial Engineering (in progress)**
*Scheduling of Process Plants under Uncertainty: A Decomposition Perspective.*
University of Valladolid

## Employment

2019–2020 **Fluids & HVAC Trainee Engineer**, AVL List GmbH

since 2020 **Pre-doctoral Researcher**, Deparment of Systems Engineering and Automatic Control, University of Valladolid

## Honors and Awards

2018 Ms.C. Scholarship granted by University of Valladolid and Banco Santander

2019 Best Poster Award on the 2019 4th IEEE CCAC

2020 Award for the Outstanding Graduate of the Year (Ms.C.)
Doctoral Scholarship granted by University of Valladolid and Banco Santander

2021 Best Paper Award in Modelling, Simulation, and Optimization on the Jornadas de Automática 2021

## Participation in Research Projects

2019-2022 Integrated Plant Wide Control and Optimization for Industry4.0 (InCO4In). Research grant PGC2018-099312-B-C31, Ministerio de Ciencia, Innovación y Universidades (Spain).

2022-2025 Advanced Components for Digital Twins (a-CIDiT). Research grant PID2021-123654OB-C31, Ministerio de Ciencia e Innovación (Spain).

## Skills

- Programming languages: Julia, Python, MATLAB, EcosimPro, C++.
- Optimization suites: GAMS, Pyomo, JuMP.
- Industrial software: AVEVA InTouch, OSIsoft PI System, Aspen Plus & Hysys, Schneider PLCs.
- Industrial standards: OPC-DA, OPC-UA, MQTT, Modbus.

## Teaching

2021-2023 Fundamentals of Automatic Control, University of Valladolid.

## Journal Publications

- Oliveira-Silva, E. de Prada, C., Montes, D., Navia, D.*Economic MPC with modifier adaptation using transient measurements*. Computers and Chemical Engineering. Vol. 173-108205, 2023, doi:https://doi.org/10.1016/j.compchemeng.2023.108205
- Montes, D., Pitarch, J. L. and de Prada, C. *Similarity-based Decomposition Algorithm for Two-stage Stochastic Scheduling*. Computers and Industrial Engineering. (In review).

## Conference Papers

- Montes, D. Hernández, S. and Alvarez, H. D. *Towards model-based control strategy for crystallization*. AADECA (Argentina), 2016.
- Montes, D. Hernández, S. and Alvarez, H. D. *Conceptos de transferencia de masa aplicados al proceso de cristalización de azúcar*. PROCESA (Colombia), 2017.
- Montes, D., Riquelme, P., Marcos, M., de Prada, C. *On parameter estimation using dynamic optimization*. CCAC (Colombia), 2019.
- Pitarch, J. L., Montes, D., de Prada, C., Sala, A. *Application of SOS-constrained regression to model unknown reaction kinetics*. ADCHEM (Italy), 2021, doi:https://doi.org/10.1016/j.ifacol.2021.08.274
- Montes, D. Zamarreño, J. M., Pitarch, J. L., Oliveira-Silva, E., de Prada, C. *Implementación de capas superiores de la pirámide de automatización en una planta piloto híbrida*. Jornadas de Automática (Spain), 2021, url:http://hdl.handle.net/2183/28340.
- Montes D., Pitarch, J. L., de Prada, C. *The Similarity Index to Decompose Two-Stage Stochastic Scheduling Problems*. DYCOPS (Korea), 2022, doi:https://doi.org/10.1016/j.ifacol.2022.07.546.
- Montes D., Pitarch, J. L., de Prada, C. *Decomposition of Two-stage Stochastic Scheduling Problems via Similarity Index*. ESCAPE (France), 200, doi:https://doi.org/10.1016/B978-0-323-95879-0.50165-X
- Montes D., Pitarch, J. L., de Prada, C. *Decomposing Two-Stage Stochastic Scheduling Problems on a continuous-time basis via Slot Similarity*. IFAC (Japan), 2023.
- Montes D., Pitarch, J. L., de Prada, C. *Extending the SI Decomposition to Continuous-Time Two-Stage Scheduling Problems*. ESCAPE (Greece), 2023, doi:https://doi.org/10.1016/B978-0-443-15274-0.50080-9.