

# Carmen AMO ALONSO

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U.S.A

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## RESEARCH INTERESTS

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- Robust and Distributed Optimal Control, Convex Optimization, Parallel Programming.
- Mathematical Linguistics, Computational Linguistics.

## EDUCATION

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| <b>California Institute of Technology</b><br><i>Ph.D. in Control and Dynamical Systems</i> | Pasadena, CA<br>2017 – Present |
| – <i>Advisor:</i> John C. Doyle  |                                |
| – <i>Thesis topic:</i> “Distributed and Localized Model Predictive Control”                |                                |
| <b>California Institute of Technology</b><br><i>M.Sc. in Space Engineering</i>             | Pasadena, CA<br>2016 – 2017    |
| <b>Polytechnic University of Madrid</b><br><i>B.Sc. in Aerospace Engineering</i>           | Madrid, Spain<br>2012 – 2016   |

## SELECTED RESEARCH EXPERIENCE

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| <b>Systems Engineering Team, Tesla Inc.</b><br><i>Graduate Student Intern</i>   | Palo Alto, CA<br>Spring 2022 (upcoming) |
| <b>Control and Dynamical Systems, California Institute of Technology</b><br><i>Graduate Research Assistant with Dr. John Doyle</i>                    | Pasadena, CA<br>2017 – Present          |
| <b>Space Propulsion Laboratory, Massachusetts Institute of Technology</b><br><i>Undergraduate Research Assistant with Dr. Manuel Martinez-Sanchez</i> | Cambridge, MA<br>Winter 2016            |
| <b>Applied Mathematics Department, Polytechnic University of Madrid</b><br><i>Undergraduate Research Assistant with Dr. Ignacio Gomez</i>             | Madrid, Spain<br>2015-2016              |
| <b>Computational Mechanics Group, California Institute of Technology</b><br><i>Undergraduate Research Assistant with Dr. Michael Ortiz</i>            | Pasadena, CA<br>Summer 2015             |
| <b>Turbocharger Research Group, Imperial College of London</b><br><i>Undergraduate Research Assistant with Dr. Ricardo Martinez-Botas</i>             | London, UK<br>Summer 2014               |

## TEACHING AND MENTORING EXPERIENCE

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| <b>Undergraduate and Graduate Mentoring, California Institute of Technology</b><br><i>Mentor of graduate student Lauren Conger</i>               | Pasadena, CA<br>Winter 2022 |
| <i>Mentor of graduate student Fengjun Yang</i>   | Spring 2021                 |
| <i>Certificate of Interest in Undergraduate Research Mentoring</i>   | Spring 2020                 |
| <i>Mentor of undergraduate summer student Sabina Gutheim</i>   | Summer 2019                 |
| <b>Undergraduate and Graduate Teaching, California Institute of Technology</b><br><i>Teaching Assistant of CDS 141 (Network Control Systems)</i> | Pasadena, CA<br>Spring 2021 |

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| <i>Teaching Assistant of CDS 231 (Robust Control Theory)</i>                                   | <i>Winter 2020</i> |
| <i>Head of Teaching Assistants of ACM 95/100 (Introductory Methods of Applied Mathematics)</i> | <i>Winter 2019</i> |
| <i>Head of Teaching Assistants of ACM 116 (Introduction to Probability Models)</i>             | <i>Fall 2019</i>   |
| <i>Teaching Assistant of ACM 95/100 (Introductory Methods of Applied Mathematics)</i>          | <i>Winter 2018</i> |

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## SELECTED HONORS AND AWARDS

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| Amazon AI4Science Fellowship   | 2021 |
| D.E. Shaw Exploration Fellowship   | 2019 |
| Foster and Coco Stanback Fellowships in Engineering and Applied Science                                  | 2016 |
| UPM-MIT Exchange Fellowship  | 2016 |
| Undergraduate Research Collaboration Fellowship - <i>Awarded by the Department of Education of Spain</i> | 2015 |
| Summer Undergraduate Research Fellowship - <i>Awarded by California Institute of Technology</i>          | 2015 |
| Undergraduate Researcher Fellowship - <i>Awarded by Polytechnic University of Madrid</i>                 | 2015 |
| Undergraduate Research Opportunity Program - <i>Awarded by Imperial College London</i>                   | 2014 |
| Gold Medal at the XXV Competition of Young Researchers in Spain  | 2012 |
| University Access Exam Excellence Award - <i>Awarded by the Department of Education of Madrid</i>        | 2012 |

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## JOURNAL PUBLICATIONS

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\* denotes equal contribution

- [J1] **C. Amo Alonso\***, F. Yang\*, and N. Matni. Data-driven distributed and localized model predictive control. Submitted to *IEEE Open Journal of Control Systems*, 2022
- [J2] **C. Amo Alonso**, J. S. Li, J. Anderson, and N. Matni. Distributed and localized model predictive control. Part II: Theoretical guarantees. Submitted to *IEEE Transactions on Control of Network Systems*, 2022
- [J3] **C. Amo Alonso**, J. S. Li, J. Anderson, and N. Matni. Distributed and localized model predictive control. Part I: Synthesis and implementation. Submitted to *IEEE Transactions on Control of Network Systems*, 2022

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## CONFERENCE PUBLICATIONS

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- [C1] J. S. Li, **C. Amo Alonso**, and J. C. Doyle. Frontiers in Scalable Distributed Control: SLS, MPC, and beyond. In *Proceedings of the 2021 IEEE American Control Conference*. IEEE, 2021
- [C2] **C. Amo Alonso**, J. Anderson, and N. Matni. Explicit Distributed and Localized Model Predictive Control via System Level Synthesis. In *Proceedings of the 59<sup>th</sup> IEEE Conference on Decision and Control*. IEEE, 2020
- [C3] **C. Amo Alonso** and N. Matni. Distributed and Localized Model Predictive Control via System Level Synthesis. In *Proceedings of the 59<sup>th</sup> IEEE Conference on Decision and Control*. IEEE, 2020
- [C4] S.-H. Tseng, **C. Amo Alonso**, and S. J. Han. System Level Synthesis via Dynamic Programming. In *Proceedings of the 59<sup>th</sup> IEEE Conference on Decision and Control*. IEEE, 2020
- [C5] **C. Amo Alonso**, D. Ho, and J. M. Maestre. Distributed linear quadratic regulator robust to communication dropouts. In *Proceedings of the 21<sup>st</sup> World Congress of the International Federation of Automatic Control*. IFAC, 2020
- [C6] N. Olsman, **C. Amo Alonso**, and J. C. Doyle. Architecture and trade-offs in the heat shock response system. In *Proceedings of the 57<sup>th</sup> IEEE Conference on Decision and Control*. IEEE, 2018

- [P1] **C. Amo Alonso** and S.-H. Tseng. Effective GPU Parallelization of Distributed and Localized Model Predictive Control. <https://arxiv.org/abs/2103.14990>, 2021
- [P2] **C. Amo Alonso**, J. S. Li, J. Anderson, and N. Matni. Robust Distributed and Localized Model Predictive Control. <https://arxiv.org/abs/2103.14171>, 2021

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ACADEMIC SERVICE

**Peer Reviewer**

*IEEE Conference on Decision and Control, IEEE American Control Conference, IEEE Transactions on Automatic Control, IEEE Transactions on Vehicular Technology, IEEE Transactions on Control of Network Systems*