

# MOHAMMAD RAMADAN

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## EDUCATION

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**Doctorate of Philosophy in Mechanical and Aerospace Engineering** *Jan 2018 - April 2023*

University of California San Diego

Dissertation title: “State Estimation for Control”

GPA: 3.90

**Bachelor of Science in Aeronautical Engineering**

*September 2011 - June 2016*

Jordan University of Science and Technology

GPA: 3.7, Dean’s list in four semesters

## EXPERIENCE

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**Argonne National Laboratory**

*Sept, 2023 - Present*

*Postdoctoral Researcher at the Mathematics and Computer Science Division*

Investigating the Koopman operator theory applied in the stochastic optimal control context, and improving the safety guarantees of data-driven control methods.

**University of California San Diego**

*Jan, 2018 - June, 2023*

*Research Assistant*

I investigated and published, in the top journal of my field, in the topics of Maximum Likelihood estimation, Monte Carlo integration, stochastic Model Predictive Control and the important interaction between estimation and control. I delivered presentations and talks in conferences and for several renowned research groups.

*Teaching Assistant*

I enjoyed teaching various grad/undergrad engineering courses: Optimal Estimation and Filtering — Classical Control Theory — MATLAB for engineers — Soft Robotics — Fluid Dynamics — Linear Circuit Design — Experimental Techniques. I received strongly positive student and faculty evaluations, and received the Outstanding Teaching Award from my department.

**ASML**

*June 2021 - Sep 2021*

*Mechanical Engineering Intern*

My main effort at ASML was to incorporate FPGAs in the design for high frequency bandwidth control algorithms. I also delivered presentations about the techniques of closed-loop iterative identification for modelling of systems’ dynamics and disturbances. My performance evaluation was 19/21 which was the highest for an intern at that time.

**MARS Robotics**

*June 2016 - Jan 2018*

*Control Systems Engineer*

At MARS, I developed the first fully functional fixed-wing UAV autopilot, from low level control to high level guidance and navigation, including auto-landing and takeoff algorithms. I also led my team in the design of a phased-microphone array mounted on a quadrotor to detect and localize abnormal events.

**Jordan University of Science and Technology**

*Jan 2014 - June 2016*

*Undergraduate Student Researcher*

I worked at the experimental mechanical vibrations laboratory. Our main focus was the implementation of modal analysis via the technique of Multiple Reference Impact Testing. This required building an experience in data acquisition and digital signal processing. We also used reduced finite element models for experiment design and validation.

## AWARDS

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- ❖ **2021-2022 MAE PhD Outstanding Teaching Assistant of the Year Award - University of California San Diego**
- ❖ **NSF I-Corps, and IGE MedTech Accelerator Awards**
- ❖ **Nucleate Startup Accelerator program finalists - San Diego 2023**

## PROGRAMMING LANGUAGES

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JULIA, PYTHON (PYTORCH), MATLAB/SIMULINK, LabVIEW (FPGA), C/C++, Linux. ([GitHub](#))

## SOME PUBLICATIONS

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- ❖ **Mohammad S. Ramadan** and Mihai Anitescu, “Extended Kalman filter–Koopman operator for tractable stochastic optimal control.” IEEE Control Systems Letters. 2024 Jun 6. (<https://doi.org/10.1109/LCSYS.2024.3410889>)
- ❖ **Mohammad S. Ramadan**, et al., ”A Control Approach for Nonlinear Stochastic State Uncertain Systems with Probabilistic Safety Guarantees.” (Accepted for publication at the 2024 ACC, Toronto, Canada) (<https://arxiv.org/pdf/2309.08767>)
- ❖ **Mohammad S. Ramadan** and Robert R. Bitmead, “Maximum Likelihood recursive state estimation using the Expectation Maximization algorithm.” Automatica, vol. 144, art. 110482, October 2022, 10 pp. (<https://doi.org/10.1016/j.automatica.2022.110482>).
- ❖ Naim Khader, and **Mohammad S. Ramadan**, “Modal parameters of multiple-disk shaft system from multiple reference impact test.” Special Topics in Structural Dynamics, Volume 6: Proceedings of the 34th IMAC, A Conference and Exposition on Structural Dynamics 2016. Springer International Publishing, 2016. ([https://doi.org/10.1007/978-3-319-29910-5\\_7](https://doi.org/10.1007/978-3-319-29910-5_7))