

# Jonathan Valverde

jonathan-valverde-l.github.io • linkedin.com/in/jonathanvalverde

## EDUCATION

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**University of Maryland**, College Park, MD

2022

**M.S.** in Computer Science

**Select Coursework:** Algorithms in Machine Learning: Guarantees and Analyses, Advanced Numerical Optimization, How and Why Artificial Intelligence Answers Questions, Applied Mechanism Design for Social Good

**Princeton University**, Princeton, NJ

2016

**B.S.E.** in Mechanical and Aerospace Engineering

**Certificates (Minors):** Applications of Computing, Robotics and Intelligent Systems.

**Select Coursework:** Artificial Intelligence, Algorithms and Data Structures, Introduction to Graph Theory, Reasoning about Computation

## RELEVANT PROFESSIONAL EXPERIENCE

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**Amazon**, Seattle, WA (Remote)

Summer 2020, Summer 2021

**Applied Scientist Intern – Prime Video Recommendations**

- Completed two research projects to improve the quality of personalized recommendations provided to customers on Amazon Prime Video.
- Proposed, implemented, and tested alternate solutions to baseline algorithms by surveying literature and performing experiments using AWS platforms.
- Leveraged deep learning and recommender system algorithms.
- Developed modular, re-usable codebases. Revised them through code reviews.
- Presented results in final papers and oral presentations.

**Intelligent Automation Inc. (IAI)**, Rockville, MD

**Research Engineer**

2017-2020

- Contributed to research projects and proposals for government clients under the Small Business Innovation Research (SBIR) program.
- Conducted experiments, performed analyses, and developed code in support of multiple research projects involving machine learning, deep learning, and data analysis.
- Presented work to clients in written reports and periodic briefings.
- Projects included: a convolutional neural network for image recognition in non-visual spectrum, an automatic speech recognition module, and a machine learning classifier for detection of automated social media accounts.

## CORE COMPETENCIES

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**Programming Languages:** Python, Java, C, MATLAB

**Python Libraries:** PyTorch, Keras, TensorFlow, Scikit-learn, Pandas, NumPy

## HONORS

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GEM Fellowship	2020
<i>Magna cum laude</i>	2016
Induction into Sigma Xi: The Scientific Research Society	2016
Sigma Xi Book Award for Outstanding Research (Awarded for Senior Thesis)	2016
Honorable Mention at the International Mathematical Olympiad (IMO)	2010

## RESEARCH & PUBLICATIONS

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**Graduate Research Project:** AutoML for Recommender Systems 2021-2022

- Research under Prof. John Dickerson (UMD) in collaboration with Colin White, Sujay Khandagale, and Duncan McElfresh (Abacus.AI).
- Work in progress targeting NIPS.

**Master's Scholarly Paper:** "Maximizing User Engagement in Social Network Advertising" (Available on Request) 2021

- Posed a multi-armed bandit problem on a graph structure to simulate the problem of choosing which advertisements to show to users on a social network, where some users are highly influential and others are followers.
- Designed an algorithm to reduce exploration at the cost of using a biased estimator in a simplified setting with a single influential node. Studied the regret against that of unbiased algorithms while varying the number of users.

**Senior Thesis:** "Exploring Multi-Armed Bandit Decision-Making Strategies in an Underwater Vehicle Testbed" (Available on Request) 2015-2016

- Utilized multi-armed bandit algorithms to estimate the spatial distribution of a resource using an underwater robot.
- Explored the effects of variations in smoothness of the field and priors given to the algorithms using metrics such as distance traveled by the robot and expected cumulative regret.
- Discovered that slightly overestimating the field's smoothness resulted in shorter distances and reduced regret.

**Jonathan Valverde**, Nikhil Nigam, Ankit Tyagi, Junghsen Lieh, Matthew Nicholson, and Alireza Behbahani. Integrated Intelligent Control of Hybrid-Electric Unmanned Air Vehicles. In *AIAA Propulsion and Energy 2019 Forum*, Indianapolis, 2019. AIAA-2019-4349 (Restricted).

## OTHER PROFESSIONAL EXPERIENCE

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**Princeton Department of Computer Science**, Princeton, NJ  
**Introduction to Programming Systems Grader** 2015-2016

- Graded and provided constructive feedback on students' weekly assignments.

**The McGraw Center for Teaching and Learning, Princeton U.**, Princeton, NJ  
**Individual Tutor (Calculus and Linear Algebra)** 2014-2015

**Princeton Department of Mechanical and Aerospace Engineering**, Princeton, NJ  
**Summer Research Intern** 2014

- Assessed a novel technique for phase retrieval by conducting experiments on optical testbed.