Lux Miranda

she/they

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CV current as of 29 August 2022

Education

2022-2027 (expected) **PhD in Computer Science**
Uppsala University, *Sweden, European Union*
Graduation expected May 2027

2020-2022 **Master of Science in Industrial Engineering**
University of Central Florida (UCF), *Orlando, Florida, USA*
Honorary 10,000th master's degree conferred by the college
Thesis: *Humans in algorithms, algorithms in humans: Understanding cooperation and creating social AI with causal generative models*

2016-2020 **Bachelor of Science with University Honors, double-major in Computational Mathematics and Computer Science, minor in Anthropology, *Cum Laude***
Utah State University (USU) , *Logan, Utah, USA*
Honors thesis: *Computationally revealing recurrent social formations and their evolutionary trajectories*

Publications

2022 (Submitted) Freeman, J., Baggio, J., **Miranda, L.**, & Anderies, J.M. (2022). Social infrastructure moderates the energy use of polities. Submitted to *Human Ecology*.

2022 (Invited; In press) **Miranda, L.**, Garibay O.O., & Baggio, J. (2022). Evolutionary model discovery of human behavioral factors driving decision-making in an irrigation experiment. Invited and in press for a special track of the *Social Simulation Conference 2022*.

2022 *Invited manuscript* **Miranda, L.** & Garibay O.O. (2022). Approaching (super)human intent recognition in stag hunt with the Naïve Utility Calculus generative model. *Computational and Mathematical Organization Theory*. https://doi.org/10.1007/s10588-022-09367-y

2022 **Miranda, L.** (2022). Humans in Algorithms, Algorithms in Humans: Understanding Cooperation and Creating Social AI with Causal Generative Models. *UCF Electronic Theses and Dissertations*. https://stars.library.ucf.edu/etd2020/1054

2022 Bird, D., **Miranda, L.**, Vander Linden, M. et al. (2022). p3k14c, a synthetic global database of archaeological radiocarbon dates. *Nature Scientific Data*. 10.1038/s41597-022-01118-7

2021 Awarded *Best Human-Autonomy Teaming Paper*

Miranda, L. & Garibay O.O. (2021). Multi-agent Naïve Utility Calculus: Intent Recognition in the Stag-Hunt Game. Social, Cultural, and Behavioral Modeling. SBP-BRiMS 2021. Lecture Notes in Computer Science, vol 12720. 10.1007/978-3-030-80387 232

2020 **Miranda, L.** & Freeman, J. (2020). The two types of society: Computationally revealing recurrent social formations and their evolutionary trajectories. *PLoS One* 10.1371/journal.pone.0232609

Presentations

07 April 2022 Humans in Algorithms, Algorithms in Humans: Understanding Cooperation and Creating Social AI with Causal Generative Models. *Thesis Defense*. University of Central Florida, Orlando, Florida, USA

07 July 2021 Multi-agent Naïve Utility Calculus: Intent Recognition in the Stag-Hunt Game. *2021 International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction and Behavior Representation in Modeling and Simulation*. Virtual

10 June 2021 Evolutionary model discovery of behavioral factors driving decision-making in an irrigation experiment. *Inverse Generative Social Science (iGSS) Workshop 2021*. Virtual https://youtu.be/Z7zmaHVSHdc

Research Experience

Summer 2022 **PIBBSS Summer Research Fellow**. Awarded the 9,000 USD Principles of Intelligent Behavior in Biological and Social Systems (PIBBSS) summer research fellowship to conduct research on human-aligned AI systems .

August 2020 - May 2022 (4 semesters) **Graduate Research Assistant.** *University of Central Florida Human-Centered Artificial Intelligence Research Laboratory & Complex Adaptive Systems Laboratory.* Contributed to the publication of three journal articles, one conference paper, and my master's thesis.

August 2019 - August 2020 (1 year) **Undergraduate Research Assistant.** *Utah State University Anthropology Program.* As part of an international archaeological working group known as PEOPLE 3000 , I helped to create and manage a new radiocarbon database larger and more complete than any other. I also worked to program and test an online social experiment studying cooperation in a common-pool resource management scenario.

Summer 2019 **Peak Summer Research Fellow.** *Utah State University.* One of ten recipients awarded the 4,000 USD Peak Summer Research Fellowship for highly-engaged undergraduate researchers to conduct work on a proposed project over the summer. The research conducted under this fellowship produced my first publication, listed above.

Summer 2018 **NASA Space Grant Consortium Fellow.** Awarded a 1,600 USD NASA space grant fellowship to continue work on a CubeSat mission as the software team leader for the USU Get Away Special Microgravity Research team. Managed a team of ten other programmers. Wrote software for a prototype platform that successfully served over a dozen high-altitude balloon flights. The project (GASPACS) was the world's first CubeSat developed entirely by undergraduate students. It successfully served its mission after being launched to the International Space Station as part of the SpaceX CRS-24 mission and deployed into low Earth orbit on 26 January 2022.

Teaching Experience

August 2020 - May 2022 (4 semesters) **Graduate Teaching Assistant.** *University of Central Florida Complex Adaptive Systems Laboratory.* Assisted in teaching, grading, and holding office hours for master's-level courses in data mining, cloud computing, and statistical analysis.

January 2018 - May 2019 (3 semesters) **Assistant Lecturer / Recitation Instructor.** *Utah State University Department of Mathematics and Statistics.* Created and gave original lectures for the Differential Equations and Linear Algebra course at USU. Held office hours, created numerous course materials, designed exam questions, and used Python to create an automated tool for online assessment creation which continued to be used by the department after my departure.

August 2016 - May 2017 (2 semesters) **Computer Science Tutor.** *Utah State University Department of Computer Science.* Tutored students in introductory computer science courses. Primarily assisted with homework concepts and code debugging.

Industry Experience

May 2017 - October 2017 (6 months) **Embedded Engineering Assistant.** Space Dynamics Laboratory, Logan, Utah. USA. Developed software for embedded systems in C++. Built a technology demo showcasing a multi-agent platform which toured the USA to help garner funding. Developed, documented, and standardized methods for in-house Linux distribution management that continued to be used after my departure.

Scholarships

November 2021 - August 2022 (8 months) **PAGES Data Stewardship Scholarship.** Received a 4,400 USD scholarship from PAGES (Past Global Changes) to continue stewardship work on the p3k14c archaeological radiocarbon database as part of the PEOPLE 3,000 working group.

Summer 2018 **Honors Study Abroad Scholarship.** Received a 1,000 USD scholarship from the USU Honors Program used towards a semester studying historical European art and theatre in Italy, Switzerland, France, and the UK.

2016-2020 (4 years) **Daniels Scholarship.** Received the full-ride Daniels Scholarship (final award amount: 58,100 USD) to attend any four-year Bachelor's program in the USA for demonstrating exceptional leadership ability, strength of character, and commitment to community betterment. To maintain the scholarship, I was required to strictly keep the Daniels Scholar Code of Conduct which entailed working a paid position for at least ten hours per week during the semester, following all local laws, being involved in community betterment, and maintaining good academic standing.

Awards

May 2022 **Honorary 10,000th Master's Degree** conferred by the UCF College of Engineering and Computer Science. Awarded for my accomplishments at UCF via faculy nomination.

April 2022 **Best 2021 Paper** within the Human-Centered Artificial Intelligence Research Laboratory. Awarded by the lab director for my publication in SBP-BRiMS 2021.

July 2021 **Best Human-Autonomy Teaming Paper**. Awarded by the *Social, Cultural, and Behavioral Modeling (SBP-BRiMS) 2021* conference for my submission.

Supplemental Courses

January 2021 **Agent-Based Modeling of Social-Ecological Systems**, CoMSES Net International Winter School, Arizona State University

Skills

Programming Python (plus pandas, numpy, matplotlib, etc.), NetLogo, JavaScript, Haskell, C++

Tools Linux, Git, Vim, LaTeX, spreadsheet macros, Canvas

Languages English (native; CEFR level C2), Swedish (conversational; CEFR level B1)

Cooking Mesoamerican, vegan pastries, hot beverages