EMILIO LUZ-RICCA

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EDUCATION

University of Cambridge, Cambridge, UK *September 2027*

PhD in Zoology (Department of Zoology)

- Supervised by Andrew Balmford, Anil Madhavapeddy, and Tom Swinfield

MRes in Environmental Data Science (Department of Earth Sciences) *September 2024*

- Passed with Distinction
- Thesis: *Quantifying Species-Specific Responses to Hunting Pressure*, supervised by Andrew Balmford and Tom Swinfield

Full funding from the Cambridge Centre for Carbon Credits (4C), member of the Artificial Intelligence for the Study of Environmental Risks (AI4ER) Centre for Doctoral Training, member of the Conservation Science Group

William & Mary, Williamsburg, Virginia, USA *May 2023*

Bachelor of Science: Major in Data Science, Minor in Mathematics

Overall GPA: 4.0

Honors and Awards:

- Graduated Phi Beta Kappa and Summa Cum Laude
- Recipient of the 2023 Outstanding Undergraduate Student in Data Science award
- James Monroe Scholar: program for academically distinguished undergraduates
- Hackathons prizes (coding competitions): 3rd place overall at RamHacks 2020, VTHacks 2021, RamHacks 2021 and sponsor prizes at HoyaHacks 2021, Oxford Hack 2022
- William & Mary Allan B. Miller Entrepreneurship Center, Rocket Pitch Fall 2021 Competition: 1st place overall

University of Oxford, Oxford, UK *June 2022*

Visiting student in Computer Science at Hertford College for two terms

Washington-Liberty High School, Arlington, Virginia, USA *June 2019*

Honors and Awards: Valedictorian, National AP Scholar

PUBLICATIONS

1. Eyres A, Arnell A, Ball TS, Cuthbert RJ, Dales M, Guizar-Coutiño A, Holland J, **Luz-Ricca E**, Madhavapeddy A, Pain L, Swinfield T, White TB, Balmford A. Informing conservation problems and actions using an indicator of extinction risk: A detailed assessment of applying the LIFE metric. *Biological Conservation*. 2026 Jan 9.
2. Heinbaugh C*, **Luz-Ricca E***, Shao H. Data-free one-shot federated learning under very high statistical heterogeneity. In *Proceedings of the Eleventh International Conference on Learning Representations* (ICLR 2023). 2023 May 1-5.
3. **Luz-Ricca E**, Landolt K, Pickens B, Koneff M. Automating sandhill crane counts from nocturnal thermal aerial imagery using deep learning. *Remote Sensing in Ecology and Conservation.* 2023 Apr 22.
4. DeSalvo GA, Hoy GR, Kogan IM, Li JZ, Palmer ET, **Luz-Ricca E**, de Gialluly PS, Wustholz KL. Blinking-based multiplexing: A new approach for differentiating spectrally overlapped emitters. *The Journal of Physical Chemistry Letters.* 2022 Jun 2.

* indicates co-first authors with equal contribution

SKILLS

Programming: Python, R, Google Earth Engine, Java, SQLite, Stata

Data Science: Spatial & Remote Sensing Analysis, Machine & Deep Learning, Data Visualization, Regression Analysis
Language: Fluent in Spanish

PRIOR EXPERIENCE

Research with Professor Huajie Shao, Williamsburg, Virginia *October 2021 – May 2023*

- Harnessed the emerging paradigm of federated learning (FL) for effective distributed learning across independent devices while maintaining user privacy, addressing challenges with high data heterogeneity across clients

W&M Google Developer Student Club Co-Founder, Williamsburg, Virginia *July 2020 – May 2023*

- Led a team of student educators to produce 11 interactive workshops on topics including natural language processing (NLP), computer vision, agent-based modeling, scientific computing, and data visualization

Research with the Institute for Integrative Conservation, Williamsburg, Virginia *January 2021 – May 2023*

- Worked with partners in U.S. Department of the Interior agencies to leverage deep learning-based object counting methods and thermal imagery to efficiently count migratory birds in aerial images of the Platte River of Nebraska

Research with Wustholz Group, Williamsburg, Virginia *September 2021 – January 2022*

- Used novel experimental single molecule spectroscopy data and one-dimensional convolutional neural networks (CNNs) to automate the identification process to classify several chemical classes from blinking traces

Commonwealth Cyber Initiative Research Fellow, Williamsburg, Virginia *August 2020 – May 2021*

- Trained an ensemble of off-the-shelf CNNs to accurately determine road quality from satellite imagery and explored the effectiveness of augmentation-based defenses for disrupting data poisoning attacks

Research with W&M STAIR Lab, Williamsburg, Virginia *September 2020 – November 2020*

- Used lexicon-based NLP methods to analyze the securitization efforts of conservative political leaders and news hosts as directed towards the migrant caravan in the fall of 2018

Monroe First-Year Research Project, Arlington, Virginia *June 2020 – July 2020*

- Applied NLP techniques to Twitter data to explore news media coverage during the coronavirus pandemic

CONFERENCE PRESENTATIONS

- "Predicting responses to hunting pressure for tropical forest mammals using remote sensing and machine learning," oral presentation at the Machine Learning for Earth Observation conference (June 2025; Exeter, UK)
- "Quantifying species-specific responses to hunting pressure using machine learning," poster presentation at the Student Conference for Conservation Science (April 2025; Cambridge, UK)
- "Data-free one-shot federated learning under very high statistical heterogeneity," poster presentation at the International Conference on Learning Representations (May 2023; virtual)
- "Counting critters: Towards a practical implementation of deep learning for the monitoring of sandhill cranes," invited presentation at the Society for Conservation GIS conference (July 2021; virtual)

RELEVANT COURSEWORK

- University of Cambridge: Conservation Science, Environmental Risk, Machine Learning and the Physical World
- William & Mary: Abstract Algebra, Agent-Based Modeling, Databases, Data Structures, Data Visualization, Econometrics, Environmental and Natural Resource Economics, Ethics and Data Science, Game Theory, Mathematical Statistics, Neural Networks & Deep Learning, Probability
- University of Oxford: Artificial Intelligence, Computational Game Theory, Graph Machine Learning, Machine Learning