# EVARISTO VILLASECO

evaristo.va@outlook.com | +1 (929) 385-8568 | New York City, NY | LinkedIn | Portfolio | Github | Google Scholar

## EDUCATION

**Ph.D. in Theoretical Physics,** *Rutgers University* | 2020–2025 | GPA: 4.0. | Best PhD Dissertation Award (University-wide).
**M.Sc. in Theoretical Chemistry and Computational Modeling,** *Autonomous University of Madrid* | 2016-2018 | 1 A+ Class Honor.
**B.Sc. in Chemistry,** *University of Salamanca* | 2012–2016 | 8 A+ Class Honors.

## SKILLS & CERTIFICATIONS

**Programming & Tools**: Python, Fortran, SQL, Bash, Git, Flask, PySpark, HPC (Slurm), AWS (EC2, S3, boto3).
**Quantitative Skills:** Statistics, Probability, A/B Testing, Time Series Forecasting, Tree-based Models, NLP, GenAI.
**ML & AI**: PyTorch, Scikit-learn, Statsmodels, XGBoost, Hugging Face, BeeAI (AI agentic framework).
**Certificates**: ColumbiaX Corporate Finance (2022), Erdős Institute Data Science & Deep Learning Boot Camps (2024).

## EXPERIENCE

**AI Engineer** | *Burnt (Internship)* | 2025–Present

- Developed a GenAI-powered assistant to automate order processing for sales representatives, integrating with WhatsApp for seamless communication. Enabled real-time data validation through RAG and vector search.
- Designed AI workflows to streamline data processing and enhance automation capabilities.
- Collaborated cross-functionally with sales and product teams to align AI features with customer feedback and investor priorities.

  Tools: Python, SQL, SQLAlchemy, BeeAI, LangChain, Flask, Mem0, Twilio.

**Research Scientist** | *Rutgers University* | 2020–Present

- Developed a novel algorithm for molecular simulations based on coupled differential-equations, achieving 87% improvement in stability and energy conservation over standard methods. Automated large-scale simulation and data processing pipelines for 10,000+ high-dimensional trajectories across 7+ molecular systems. Integrated core contributions into open-source softwares.

  Results published in: J. Chem. Phys. 158 (2023) and J. Chem. Theory Comput. 19 (2023).
- Derived a physics-informed framework and forecasting model for time-dependent molecular observables, boosting predictive accuracy by 90% over traditional modeling approaches. Designed numerical experiments to isolate the key dynamical features, enhancing signal interpretability and exposing critical limitations in conventional approaches.

  Results published in: Phys. Rev. Lett. 133, 233201 (2024).
- Led an international research collaboration of 5 scientists to develop novel molecular dynamics simulation methods, resulting in 5 peer-reviewed publications in high-impact journals and 4 presentations at international conferences.

  Tools: Python, Fortran, Bash, Git, HPC (Slurm).

**Developer** | *g-ctmqc & QuantumModelLib* | 2022–2025

- Contributed to open-source tools for molecular dynamics, expanding g-ctmqc simulation capabilities by 25% with new simulation schemes and adding two quantum models to QuantumModelLib, increasing modeling options by 5%.

  Tools: Python, Fortran, Bash, Git.

**Machine Learning Scientist** | *Burnt (Internship)* | 2024

- Developed a time-series forecasting model for restaurant sales and menu items, projecting $250k/year savings on food costs. Performed extensive analytics uncovering key sales trends and consumer behavior to optimize inventory and menu decisions.
- Fine-tuned LLMs (LLaMA2, BERT, GPT-2) via QLoRA, improving product categorization across food suppliers with ~92.5% accuracy.

  Tools: Python, PyTorch, Huggin Face, Statsmodels, Scikit-learn, Pandas, Seaborn.

## INDEPENDENT PROJECTS

- BiteBuddy: Built an LLM-powered nutrition assistant to deliver personalized nutrition plans leveraging tool calling and prompt engineering. Deployed on AWS (EC2, S3, Secrets Manager) for scalable, real-time access via a browser interface.

  Tools: Python, Streamlit, AWS (EC2, S3, boto3, Secrets Manager) OpenAI
- LaLiga SoccerSage: Built a Random Forest model to predict LaLiga match outcomes, outperforming bookmaker probabilities by 24%. Integrated 10+ seasons of historical match data and engineered performance metrics for a robust predictive model for sport analytics.

  Tools: Scikit-learn, XGBoost, Pandas, Seaborn, Matplotlib.

- YouTube Trends & Insights: Conducted a cross-country analysis of 60k+ YouTube trending videos to uncover factors driving virality and creator success. Provided insights for content optimization, advertiser targeting, and recommendation systems refinement..
  Tools: Pandas, Seaborn, Matplotlib.

## PUBLICATIONS

- **E. Villaseco Arribas** and N. T. Maitra. *Phys. Rev. Lett. 133, 233201 (2024).*
- **E. Villaseco Arribas**, N. T. Maitra, and F. Agostini. *J. Chem. Phys. 160, 054102 (2024).*
- L. M. Ibele, E. Sangiogo Gil, **E. Villaseco Arribas**, and F. Agostini. *Phys. Chem. Chem. Phys. (2024).*
- A. Pollien, **E. Villaseco Arribas**, D. Lauvergnat, and F. Agostini. *Mol. Phys. 0 (2024), e2378960.*
- **E. Villaseco Arribas** and N. T. Maitra. *J. Chem. Phys. Commun. 158, 161105 (2023)*
- **E. Villaseco Arribas**, L. M. Ibele, D. Lauvergnat, N T. Maitra, and Federica Agostini. *J. Chem. Theory Comput. 19 (2023).*
- **E. Villaseco Arribas**, P. Vindel-Zandbergen, S. Roy, and N. T. Maitra. *Phys. Chem. Chem. Phys. 25, 26380 (2023).*
- **E. Villaseco Arribas**, F. Agostini, and N. T. Maitra. *Molecules 27 (2022), p. 13.*
- A. Emelianova, E. A. Basharova, A. L. Kolesnikov, **E. Villaseco Arribas**, E. V. Ivanova and G. Y. Gor. *J. Phys. Chem. B 125, 16, 4086-4098 (2021).*
- A.L. Ruiz, **E. Villaseco Arribas** and K. McEnnis. *Mater. Adv., 3, 2858-2870 (2022).*

## SPEAKING ENGAGEMENTS AND CONFERENCES

**American Conference in Theoretical Chemistry (ACS)** | New Orleans, LA, USA (2024)

**Seminar Series, Universidad de Salamanca** | Salamanca, Spain (2023)

**CECAM Workshop** | Lausanne, Switzerland (2022)

**American Conference in Theoretical Chemistry (ACS)** | Palisades Tahoe, CA, USA (2022)

**American Conference in Theoretical Chemistry (ACS)** | Palisades Tahoe, CA, USA (2022)

**Seminar Series, Université Paris Saclay** | Paris, France (2022)

**ACS Northeastern Regional Meeting** | Rochester, NY, USA (2022)

## AWARDS

**Outstanding Dissertation Award** | *Rutgers University* | 2025
Awarded for the best dissertation of Rutgers University in 2025, with recognition in the Hooding Ceremony program, a monetary price, and a place on a commemorative plaque.

**Chateaubriand Fellowship** | *Embassy of France in the United States* | 2023
Awarded a prestigious fellowship to lead a joint research project between Université Paris-Saclay and Rutgers University that resulted in 5 peer-reviewed publications.

**Dean Dissertation Fellowship** | *Rutgers University* | 2023
Awarded a year-long fellowship to support the completion of my dissertation, recognizing exceptional research contributions in physics.

**ICIQ Summer Fellowship** | *Institute of Chemical Research of Catalonia* | 2016
Ranked in the top 1.4% among 1,000+ applicants for a prestigious research program in one of Spain's leading chemical institutions.

**IFIMAC Grant** | *Institute of Condensed Matter Physics* | 2016
Awarded a full-tuition M.Sc. scholarship and living stipend for outstanding academic performance.