CD Cordioli Davide

ABOUT ME

M.Sc. Graduate in Artificial Intelligence from the University of Verona, highly motivated to pursue a career in scientific research and academic teaching within the field of Artificial Intelligence.



Name **Cordioli Davide**
Sex **Male**
Date of Birth **28/12/2001**
Nationality **Italian**

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PROGRAMMING

- Python
- C
- Java
- Css
- Assembly
- PHP
- JavaScript
- SQL

EDUCATION

2023 – 2026 | Master's Degree in Artificial Intelligence
Department of Computer Science, University of Verona
(Graduated: March 27, 2026)

- Final Grade: 110/110 cum Laude
- Thesis Title: *"Seldonian-inspired distributional shielding for autonomous navigation"*
- Supervisor: Prof. Alberto Castellini
- Reviewer: Prof. Alessandro Farinelli
- Relevant Coursework & Exams:
  - Planning and Automated Reasoning (12 CFU): 30/30
  - Natural Language Processing (6 CFU): 30/30 e lode
  - Reinforcement Learning & Advanced Programming for AI (12 CFU): 30/30 e lode
  - Quantum Computing (6 CFU): 30/30 e lode
  - Machine Learning & Deep Learning (12 CFU): 30/30
  - AI and Finance (6 CFU): 29/30
  - Computational Epistemology and Philosophy (6 CFU): 30/30 e lode
  - Knowledge Representation (6 CFU): 30/30 e lode
  - AI in Robotics (6 CFU): 30/30 e lode
  - Explainable AI (6 CFU): 28/30
  - HCI – Intelligent Interfaces (6 CFU): 30/30
  - Computer Vision & Deep Learning (6 CFU): 29/30
  - Training / Tirocinio (12 CFU): approved

2020 – 2023 | Bachelor's Degree in Computer Science
Department of Computer Science, University of Verona
(Graduated: December 5, 2023)

- Final Grade: 105/110
- Thesis Title: *"Security of IoT systems implemented with AWS: vulnerability analysis and mitigation using diagnostic tools provided by the Cloud"*
- Supervisor: Prof. Mila Dalla Preda
- Relevant Coursework & Exams:
  - Programmazione I (12 CFU): 30/30
  - Fondamenti dell'Informatica (6 CFU): 30/30
  - Programmazione II e Ingegneria del Software (12 CFU): 29/30

SOFTWARE FOR CYBERSECURITY

ProofPoint

Barracuda

SentinelOne

CrowdStrike

PaloAlto

KNOWLEDGE OF DEEP LEARNING FRAMEWORKS AND RELATED LIBRARIES

PyTorch

TensorFlow + Keras

Jax + Flax

Scikit-learn

Numpy

- Programmazione e Sicurezza delle Reti (6 CFU): 30/30 e lode
- Basi di Dati (12 CFU): 30/30 e lode
- Architettura degli Elaboratori (12 CFU): 28/30
- Reti di Calcolatori (6 CFU): 27/30
- Sistemi Operativi (12 CFU): 26/30
- Sistemi (6 CFU): 25/30
- Linguaggi (6 CFU): 28/30
- Algoritmi (12 CFU): 23/30
- Logica (6 CFU): 23/30
- Analisi Matematica I (6 CFU): 28/30
- Analisi Matematica II (6 CFU): 18/30
- Algebra Lineare (6 CFU): 29/30
- Probabilità e Statistica (6 CFU): 21/30
- Fisica I (6 CFU): 30/30
- Fisica II (6 CFU): 20/30
- Elaborazione di Segnali e Immagini (6 CFU): 22/30
- Lingua Inglese - Competenza Linguistica B1 e B2 (10 CFU): Approved
- Tirocinio (12 CFU): Approved
- Emozioni e Resilienza: Gestione Psicologica del Rischio legato ai Disastri (2 CFU): Approved

2015 – 2020 | High School Diploma in Applied Sciences
Liceo "Enrico Medi", Villafranca di Verona

PROFESSIONAL & RESEARCH EXPERIENCE

10/2026 – 09/2029 | PhD in Computer Science
Department of Computer Science, University of Verona

- PhD Research Focus: *"Safe Reinforcement Learning Methodologies with Probabilistic Guarantees"*
- Supervisor: Prof. Alberto Castellini
- Core Activities: The research aims to extend the core concepts of the Seldonian framework to complex, continuous Reinforcement Learning domains, overcoming its scalability limitations to enforce intuitive probabilistic safety guarantees in real-world scenarios.

04/2026 – 09/2026 | Research Fellow
Department of Computer Science, University of Verona

- Project: *"Safe Reinforcement Learning for Autonomous Management of Hybrid Heat Pumps"*
- Supervisor: Prof. Alberto Castellini
- Contract: 6 months research contract
- Core Activities: Core research focused on Safe Reinforcement Learning (Safe RL) at the ISLa Laboratory. Responsibilities include the analysis,

evaluation, and deployment of state-of-the-art algorithms, alongside the development of innovative Safe RL solutions for optimizing residential HVAC systems. Concurrently extending Master's thesis methodology for submission to a peer-reviewed international conference.

09/2024 – 02/2025 | Research Internship
Department of Computer Science, University of Verona

- Supervisors: Prof. Alberto Castellini, Prof. Alessandro Farinelli
- Contract: 6-Month Curricular Internship (Master's Degree Program)
- Core Activities: development of algorithms and software tools for applying reinforcement learning in safety-critical contexts with risk management. The work involved an in-depth study of state-of-the-art approaches and methods for risk management, their theoretical extension, and practical software implementation to enable their application to real-world problems.

07/2024 – 02/2025 | Research Fellow
Department of Computer Science, University of Verona

- Project: *"Construction of a data management platform for a performance analysis system for early diagnosis of dyslexia"*
- Supervisor: Prof. Matteo Cristani
- Contract: 6 months research contract
- Core Activities: Designed and developed a secure data management platform tailored for performance metrics in diagnostic tests for early dyslexia detection. Successfully deployed the architecture within the Pre.Dis.A and Co.Ri.Po projects, targeting screening protocols for first- and second-grade students.

04/2023 – 07/2023 | Cybersecurity Intern
HWG S.r.l., Verona, Italy

- Supervisor: Prof. Spoto Fausto
- Contract: 6-Month Curricular Internship (Bachelor's Degree Program)
- Core Activities: Handled day-to-day Security Operations Center (SOC) duties. Main tasks included malicious email forensics via ProofPoint and Barracuda protection technologies, network security monitoring, VPN architecture configuration via Palo Alto platforms, and the operational management of Endpoint Detection and Response (EDR) platforms (CrowdStrike, SentinelOne).

TEACHING EXPERIENCE

11/2024 – 12/2024 | Academic Support Tutor
Department of Computer Science, University of Verona

- Contract: 1 month
- Core activities: providing remedial teaching support and academic onboarding assistance for international students enrolled in the Master's Degree in Artificial Intelligence.

11/2025 – 12/2025 | Academic Support Tutor
Department of Computer Science, University of Verona

- Contract: 1 month
- Core activities: providing remedial teaching support and academic onboarding assistance for international students enrolled in the Master's Degree in Artificial Intelligence.

THESIS PROJECTS

03/2025 – 03/2026 | Master's Degree Research Thesis
Department of Computer Science, University of Verona

- Supervisor: Prof. Alberto Castellini,
- Reviewer: Prof. Alessandro Farinelli
- Core Activities: as a direct extension of the Master's internship, this role focused on developing algorithms and software tools to apply Reinforcement Learning in safety-critical contexts. Responsibilities included investigating state-of-the-art risk management approaches, expanding their theoretical frameworks, and implementing software solutions. Compared to the internship, the thesis project shifted toward rigorous algorithmic formalization and experimental benchmarking against existing methods. The thesis project, subsequently extended through a research contract, led to the submission of two peer-reviewed conference papers (see next section).

08/2023 – 11/2023 | Bachelor's Thesis
University of Verona, in collaboration with IOTINGA S.r.l.

- Supervisor: Prof. Mila Dalla Preda
- Core Activities: Investigated cybersecurity vulnerabilities in IoT ecosystems integrated with AWS cloud infrastructure, developing customized mitigation strategies leveraging native AWS diagnostic and cloud tools.

PUBLICATIONS

- Cordioli, D., Castellini, A., & Farinelli, A. (2026). *Seldonian-Inspired Distributional Epistemic Shielding, 19th European Workshop on Reinforcement Learning*

PROJECTS ADDITIONAL DETAILS

Research Article Development: *"DESSIE: Seldonian-Inspired Distributional Epistemic Shielding for Safe Robot Navigation"*

- Supervisors: Prof. Alberto Castellini, Prof. Alessandro Farinelli
- Location & Duration: University of Verona | 14 months (combining internship and master's degree research thesis)
- Description: Extended and refined the work started during the Master's thesis, introducing structural improvements both algorithmically and experimentally. The

consolidation of the methodology allowed for more solid results, enriched by new analytical observations and a direct comparison with the state of the art. From an application perspective, the activity involved moving beyond frameworks like Safety Gymnasium and Bullet Safety Gym in favor of the CoppeliaSim platform. Within this ecosystem, three distinct environments for autonomous navigation and obstacle avoidance were developed, specifically designed to validate the algorithm in scenarios characterized by critical safety constraints (safety-critical).
- Code: to be made publicly available upon paper acceptance.

LivingLab Simulator & RL Benchmark Testing
- Supervisor: Prof. Alberto Castellini
- Location & Duration: University of Verona | 2 months
- Description: Research activity conducted within the project *"Safe Reinforcement Learning for Autonomous Management of Hybrid Heat Pumps"*. The core focus involved the advancement of an indoor simulation environment for domestic HVAC systems, built upon Gymnasium and CityLearn libraries. The framework was technically extended by integrating a dual-source heat pump model. Concurrently, state-of-the-art Reinforcement Learning algorithms—specifically SAC, PPO, and Lagrangian PPO—were implemented and validated to optimize residential thermal energy management and efficiency.
- Code: https://github.com/Isla-lab/LivingLab.git

Master's degree Thesis Project: *"Seldonian-inspired distributional shielding for autonomous navigation"*
- Supervisors: Prof. Alberto Castellini, Prof. Alessandro Farinelli
- Location & Duration: University of Verona | 12 months
- Description: Investigated safety guarantees in Reinforcement Learning, focusing on addressing the computational limitations of the Seldonian framework in complex environments. Proposed an architecture integrating Distributional RL and Shielding techniques with neural network ensembles for epistemic uncertainty management. Implemented entirely in Python using JAX and Flax, with rigorous evaluation across Safety Gymnasium, Bullet Safety Gym, and CoppeliaSim.
- Code: https://github.com/28dvd28/Tesi-Magistrale.git

Pre.Dis.A. Project Data Collection Platform
- Supervisor: Prof. Matteo Cristani
- Location & Duration: University of Verona | 6 months
- Description: Commissioned by the Rotary Club Verona e Provincia and ULSS9. Built an automated data collection and diagnostic screening system on Moodle to identify and classify the severity of learning difficulties in primary school students. Developed using PHP, HTML, CSS, and JavaScript.

Bachelor's degree Thesis Project *"Security of IoT systems implemented with AWS: vulnerability analysis and mitigation using diagnostic tools provided by the Cloud"*
- Supervisor: prof. Mila Dalla Preda
- Location & Duration: University of Verona and IOTINGA S.R.L. | 3 months

- Description: The project concerned cybersecurity in the IoT field on Amazon Web Services. IRSAP NOW, an intelligent heating management system oriented towards energy efficiency, was analyzed. The work included the study of IoT vulnerabilities, the analysis of AWS security solutions, and the implementation of a protection system in a test environment, also developed using Python.

COMPETENCIES

- **Languages:** Italian (Native) | English (B2 level certified by the University Language Centre - CLA, University of Verona).
- **Programming Languages:** Python (Advanced), C, Java, SQL, PHP, JavaScript, CSS, Assembly.
- **Core AI Competencies:** Advanced theoretical and practical knowledge of Machine Learning, Deep Learning, and Reinforcement Learning paradigms (specifically Safe RL, Seldonian framework and Distributional RL).
- **Frameworks & Libraries:** PyTorch, JAX, Flax, TensorFlow, Keras, Scikit-learn, NumPy.

ACADEMIC ROLES AND ACTIVITIES

2023 – 2025 | Student Representative
Joint Teachers-Students Committee (CPDS), Master's Degree Program in Artificial Intelligence, University of Verona

2018 – 2019 | National Programming Competition Participant
National Turing Machine Programming Competition, Department of Computer Science, University of Pisa

OTHER MATERIAL FOR TUTORING ACTIVITY EVALUATION

Pedagogical Approach & Student Support Methodology:
Demonstrated experience in academic onboarding and remedial tutoring tailored for international students in the M.Sc. in Artificial Intelligence. Focus on active learning, breaking down complex AI algorithms (Reinforcement Learning, Machine Learning, Mathematical Foundations) into intuitive concepts, and facilitating practical Python/JAX hands-on problem-solving sessions.

Educational Quality Assurance & Academic Governance:
Served as Student Representative in the Joint Teachers-Students Committee (CPDS) for the M.Sc. in Artificial Intelligence (2023–2025). Actively contributed to evaluating educational quality, analyzing student feedback metrics, and collaborating with faculty members to refine course curricula and improve academic support frameworks.

Domain Expertise & High Academic Standing:
M.Sc. in Artificial Intelligence completed with top honors (110/110 cum Laude), ensuring deep technical subject-matter competence across core computer science and advanced AI subjects to effectively guide students.