



Davide Dell'Anna

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About Me

I'm Assistant Professor in the Responsible AI group of the Department of Information and Computing Sciences of Utrecht University. My research focuses on methodologies and solutions for Artificial Intelligence systems that need to cooperate synergistically and proactively with humans. I focus on automated data-driven mechanisms that explicitly account for human intentionality and expertise to ensure behaviors that are aligned with human norms and values. My contributions have applicability in domains such as healthcare, social computing, and transportation.

Education and Previous Academic Positions

Assistant Professor (Current Position) <i>Utrecht University, Dept. of Information and Computing Sciences</i> Research Group: "Responsible AI" (AI & Data Science division)	2024 - now
Postdoctoral Researcher <i>Utrecht University, Hybrid Intelligence Center</i> Project: "Hybrid Intelligence" Advisor: P. Yolum.	2023 - 2024
Postdoctoral Researcher <i>Delft University of Technology, Dept. of Control and Operation</i> Projects: "Creative Social Robots with Evolutionary AI for Personalized Dementia Therapy". "Human-like norm-aware cognitive robots for autonomous interactions with humans". Advisor: A. Jamshidnejad.	2021 - 2023
PhD in Information and Computing Sciences <i>Utrecht University, Dept. of Information and Computing Sciences</i> Thesis: "Data-Driven Supervision of Autonomous Systems" Thesis advisors: M. Dastani, F. Dalpiaz, S. Brinkkemper and J.-J.Ch. Meyer.	2017 - 2021
MSc in Computer Science <i>University of Turin, Dept. of Computer Science</i> Thesis: "Numerical and temporal planning for a multi-agent team acting in the real world" 110/110 with honors and recommendation for publication / Thesis advisor: P. Torasso	2013 - 2016
BSc in Computer Science <i>University of Turin, Dept. of Computer Science</i> Thesis: "A mixed-initiative approach to resource constrained planning" 110/110 with honors / Thesis advisors: P. Torasso and E. Scala	2010 - 2013

Involvement in the Scientific Community

Editorial Activities

- CEUR-WS, Associate Editor of the CEUR-WS Free Open-Access Publication Service of Proceedings for Computer Science Workshops

Organizing Committee

- NLP4RE@REFSQ 2024, Co-Organizer of the 7th International Workshop on Natural Language Processing for Requirements Engineering (NLP4RE'24), co-located with REFSQ 2024
- RE 2023, Student Volunteers Co-Chair of the 31st IEEE International Requirements Engineering Conference
- NLP4RE@REFSQ 2022, Co-Organizer of the 5th International Workshop on Natural Language Processing for Requirements Engineering (NLP4RE'22), co-located with REFSQ 2022
- REFSQ 2018, Student Volunteers Chair for the 24th International Working Conference on Requirements Engineering: Foundation for Software Quality

Program Committee

- HHAI 2024, 3rd International Conference on Hybrid Human-Artificial Intelligence
- IJCAI 2024, 33rd International Joint Conference on Artificial Intelligence
- ECAI 2024, 27th European Conference on Artificial Intelligence
- RE4AI@REFSQ 2024, 5th International Workshop on Requirements Engineering for Artificial Intelligence
- EMAS@AAMAS 2024, 12th International Workshop on Engineering Multi-Agent Systems
- C-MAS@AAMAS 2024, 2nd International Workshop on Citizen-Centric Multiagent Systems
- AAMAS 2024, 23rd International Conference on Autonomous Agents and Multiagent Systems
- AIRE@RE 2024, 11th International Workshop on Artificial Intelligence and Requirements Engineering
- RE 2024, 32nd IEEE International Requirements Engineering conference
- CAIN 2024, 3rd International Conference on AI Engineering – Software Engineering for AI
- REFSQ 2024, 30th International Working Conference on Requirement Engineering: Foundation for Software Quality
- ECAI 2023, 26th European Conference on Artificial Intelligence
- AIRE@RE 2023, 10th International Workshop on Artificial Intelligence and Requirements Engineering
- EMAS@AAMAS 2023, 11th International Workshop on Engineering Multi-Agent Systems
- AAMAS 2023, 22nd International Conference on Autonomous Agents and Multiagent Systems
- REFSQ 2023, 29th International Working Conference on Requirement Engineering: Foundation for Software Quality
- NLP4RE@REFSQ 2023, 6th International Workshop on Natural Language Processing for Requirements Engineering
- NWO ICT.OPEN 2023, Track: Policy design and operationalization for data and AI governance
- AMPM@JURIX 2022, 2nd Workshop on Agent-based Modelling and Policy-Making
- EMAS@AAMAS 2022, 10th International Workshop on Engineering Multi-Agent Systems
- AAMAS 2022, 21st International Conference on Autonomous Agents and Multiagent Systems
- RE4AI@REFSQ 2022, 3rd International Workshop on Requirements Engineering for Artificial Intelligence
- iMLSE@APSEC 2021, 3rd International Workshop on Machine Learning Systems Engineering
- EMAS@AAMAS 2021, 9th International Workshop on Engineering Multi-Agent Systems
- RE4AI@REFSQ 2021, 2nd International Workshop on Requirements Engineering for Artificial Intelligence
- iMLSE@APSEC 2020, 2nd International Workshop on Machine Learning Systems Engineering

Tutorials in Conferences

- RE 2024, Promotion of Open Science in Requirements Engineering: Leveraging the Open Research Knowledge Graph for FAIR Scientific Information. O. Karras, A. Ferrari, D. Fucci, D. Dell'Anna.
- RE 2023, Towards Facilitating Replication in NLP4RE. S. Abualhaija, F. B. Aydemir, D. Dell'Anna, A. Ferrari, X. Franch, D. Fucci.

Competitions in Conferences

- HHAI 2024, The 1st What-is-HI Competition (HI Comp 2024, HHAI): The Pearls and Perils of Hybrid (Human-AI) Intelligence System Design. D. Dell’Anna, B. Dudzik, D. Grossi, C. Jonker, P. Murukannaiah, P. Yolum.
- AAMAS 2024, The Hybrid Intelligence Competition (HI Comp 2024, AAMAS): The Pearls and Perils of Hybrid (Human-AI) Intelligence System Design. D. Dell’Anna, B. Dudzik, C. Jonker, P. Murukannaiah, P. Yolum.

Reviewer

- RE 2023, 31st IEEE International Requirements Engineering Conference
- C-MAS@AAMAS 2023, 1st International Workshop on Citizen-Centric Multiagent Systems
- CAISE 2023, 35th International Conference on Advanced Information Systems Engineering
- REFSQ 2021, 27th International Working Conference on Requirement Engineering: Foundation for Software Quality
- PRIMA 2020, 23rd International Conference on Principles and Practice of Multi-Agent Systems
- RCIS 2020, 14th International Conference on Research Challenges in Information Science
- EMAS@AAMAS 2019, 7th International Workshop on Engineering Multi-Agent Systems
- AAMAS 2018, 17th International Conference on Autonomous Agents and Multiagent Systems
- EUMAS 2017, 15th European Conference on Multi-Agent Systems

Student Volunteer

- RE 2017, 2018, 2019, 25-27th IEEE International Requirements Engineering Conference

Reviewing for Journals

- Annals of Mathematics and Artificial Intelligence - Springer
- Autonomous Agents and Multi-Agent Systems - Springer
- Business & Information Systems Engineering - Springer
- Frontiers in Artificial Intelligence - Frontiers
- Internet Computing - IEEE
- Journal of Systems and Software - Elsevier
- Machine Learning - Springer
- Requirements Engineering - Springer
- Software Quality Journal - Springer
- Transactions on Software Engineering - IEEE
- World Wide Web: Internet and Web Information Systems - Springer

Teaching and Academic Activities

Teaching

2024 - now

Utrecht University, Dept. of Information and Computing Science

- Responsible Data Science (2024)

Students Supervision and Mentoring

2018 - now

Utrecht University, Delft University of Technology

- MSc:** An LLM-based approach to identifying and extracting context-specific personal values from text (2024)
- MSc:** Personalized and Adaptive Cognitive Human-Robot Interaction with a Novel Fuzzy Logic Control and Reinforcement Learning-Based Paradigm (2023)
- MSc:** Balancing Norms and Goals in Normative Agents (2020)
- BSc:** Effect of Norm Enforcement on Traffic Congestion via SUMO Simulation with Norm-Aware Agents (2018)

Seminars and Talks

2021 - now

- Invited speaker for the AI and Data Science division of the Department of Information and Computing Sciences of *Utrecht University* (December 2023). Title of the talk: “Data-Driven Revision of Conditional Norms in Multi-Agent Systems”.

- Guest Lecture for the Intelligent Agents course of the Department of Information and Computing Sciences of *Utrecht University* (October 2023). Lecture: “Social agent architectures”.
- Invited speaker for the Graduating at C&S lunch lecture of the Department of Control and Operation of *TU Delft* (March 2022). Title of the presentation: “Mathematical Decision Making”.
- Invited speaker for the Graduate Seminars of the Department of Computer Engineering of *Boğaziçi University* (December 2021). Title of the talk: “Evolving Fuzzy Logic Systems for Personalized Creative Socially Assistive Robots”.

Teaching Assistant

2017 - 2020

Utrecht University, Dept. of Information and Computing Science

- Requirements Engineering (2020)
- Methods in AI Research (2019)
- Informatics Introduction Project (2018, 2019)
- Intelligent Systems (2018)
- Logic for Computer Science (2017)

Tutoring

2018 - 2019

Utrecht University, Dept. of Information and Computing Science

I have tutored 12 students throughout their 3 years Bachelor’s program.

Grants and Fundings

NWO Open Competition Domain Science - XS Grant packet 21-3

2021

NWO (Dutch Research Council), Dutch National Science Funding Agency

Project: Human-like norm-aware cognitive robots for autonomous interactions with humans.

Amount of the grant: euros 50,000.

Research Grant - Computer Science Department, University of Turin

2015

European Regional Development Fund (ERDF) and Piedmont Region (Italy), in the context of the SMAT-F2 industrial research project

Project: Integration of Intelligent Methods in an End-To-End System for Supporting Mission Planning.

Amount of the grant: euros 10,000.

Research Grant - Computer Science Department, University of Turin

2014

European Regional Development Fund (ERDF) and Piedmont Region (Italy), in the context of the SMAT-F2 industrial research project

Project: Intelligent Methods for Supporting Mission Planning.

Amount of the grant: euros 10,000.

Awards

”Quality Champion” award - ECAI 2023

2023

26th European Conference on Artificial Intelligence (ECAI 2023)

Award recognizing outstanding PC-committee members (58 over 700 eligible, 8.3%) for contributions that have improved the reviewing/selection process, and helped to make ECAI 2023 ”bigger and better”.

Outstanding PC Member award - AAMAS 2023

2023

22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2023)

Outstanding PC members (16 over 436, 3.7%) have received endorsements from area chairs and/or SPC members for their high quality of reviews and engagement in the reviewing process.

Research Projects and International Collaborations

Hybrid Intelligence

2023 - now

Hybrid Intelligence Center: Utrecht University, VU Amsterdam, University of Amsterdam, Delft University of Technology, University of Groningen, University of Leiden, University of Twente

10-year gravitation programme funded by the Dutch Ministry of Education, Culture and Science through the Netherlands Organisation for Scientific Research. Personal role: to investigate methodologies and metrics for designing and evaluating hybrid intelligence systems that combine human and machine intelligence, expanding human intellect instead of replacing it.

Human-like norm-aware cognitive robots for autonomous interactions with humans

2021 - 2023

Delft University of Technology

Research project funded by NWO Open Competition Domain Science - XS 21-3 grant. Personal role: grant acquisition and design and development of solutions for AI systems (with particular attention to robotic companions) that can make decisions and interact with humans aligned with our norms and values.

Creative Social Robots with Evolutionary AI for Personalized Dementia Therapy

2021 - 2022

Delft University of Technology

Research project. Personal role: development of a novel evolutionary artificial intelligence approach, combining fuzzy logic and genetic algorithm techniques, to design creative socially assistive robots for dementia therapy.

Large-Scale Agent-Based Social and Epidemic Simulation

2020 - now

Utrecht University, University of Virginia

Ongoing scientific collaboration. Personal role: design and modeling of a distributed agent-based simulation framework for social and epidemic simulations (e.g., COVID-19 simulations) with millions social and norm-aware belief-desire-intention BDI agents.

Explainability, Replicability and Verifiability in Software Engineering

2019 - now

Utrecht University, Bogaziçi University, Universitat Politècnica de Catalunya, CNR-ISTI, Blekinge Institute of Technology

Ongoing scientific collaboration. Personal role: investigating explainable Machine Learning solutions in the context of Software Engineering (with a particular focus on Natural Language Processing for Requirements Engineering), and investigating adequate and sound empirical standards for conducting and reporting ML4SE research to foster replicability and verifiability.

BECOME - Big data supporting Emergency Care imprOveMEnt

2016 - 2017

Utrecht University, University of Turin, University of Genoa

Scientific collaboration, supported by Piedmont Region (Italy) and by Fondazione CRT under the grant “Big data supporting Emergency Care imprOveMEnt” (BECOME). Personal role: modeling and evaluating discrete event simulations to assess the impact of dynamic policies for the allocation of patients to hospital emergency departments, based on the real-time workload of the regional network of departments.

SMAT-F2

2014 - 2015

University of Turin

Research project, funded by the European Regional Development Fund (ERDF) and Piedmont Region (Italy), and led by Alenia Aermacchi. Personal role: development of intelligent methods for supporting mission planning in an end-to-end Advanced Environment Monitoring System based on Unmanned Air Vehicles.

Extra-Curricula Experience

Freelance Web Developer

2010 - 2016

autoricambirossetto.it ('16), euroautomation.it ('15), pedrettigraniti.it ('14), rewis.it ('14), etc.

Lights, Sound, Video Service, Animation Video Maker, IT Consultancy

2010 - 2016

Publications

Journal Papers

- [j1] Dudzik, B.; van der Waa, J. S.; Chen, P.; Dobbe, R.; de Troya, I.; Bakker, R.; de Boer, M. H. T.; Smit, Q.; Dell'Anna, D.; Erdogan, E.; Yolum, P.; Wang, S.; Santamaria, S. B.; Krause, L.; and Kamphorst, B. A., "Viewpoint: Hybrid Intelligence Supports Application Development for Diabetes Lifestyle Management", *Journal of Artificial Intelligence Research*, (To Appear) (2024).
- [j2] Abualhaija, S.; Aydemir, F. B.; Dalpiaz, F.; Dell'Anna, D.; Ferrari, A.; Franch, X.; and Fucci, D., "Replication in Requirements Engineering: the NLP for RE Case", *ACM Transactions on Software Engineering and Methodology*, (2024).
- [j3] J. de Mooij, P. Bhattacharya, D. Dell'Anna, M. Dastani, B. Logan, S. Swarup, "A Framework for Modeling Human Behavior in Large-scale Agent-based Epidemic Simulations", *Simulation* **99**(12), 1183-1211 (2023).
- [j4] D. Dell'Anna, F.B. Aydemir, F. Dalpiaz, "Evaluating Classifiers in SE Research: The ECSER Pipeline and Two Replication Studies", *Empirical Software Engineering* **28**, 3 (2023).
- [j5] D. Dell'Anna, N. Alechina, F. Dalpiaz, M. Dastani, and B. Logan, "Data-Driven Revision of Conditional Norms in Multi-Agent Systems", *Journal of Artificial Intelligence Research* **75**, 1549-1593 (2022).
- [j6] D. Dell'Anna, A. Jamshidnejad, "Evolving Fuzzy Logic Systems for Creative Personalized Socially Assistive Robots", *Engineering Applications of Artificial Intelligence* **114**, 105064 (2022).
- [j7] D. Dell'Anna, M. Dastani, and F. Dalpiaz, "Runtime Revision of Sanctions in Normative Multi-Agent Systems", *Autonomous Agents and Multi-Agent Systems* **34**(2), 43 (2020).
- [j8] D. Dell'Anna, F. Dalpiaz, and M. Dastani, "Requirements-driven evolution of sociotechnical systems via probabilistic reasoning and hill climbing", *Automated Software Engineering* **26**(3), 513-557 (2019).

Conference and Workshop Papers

- [c1] D. Dell'Anna, Murukannaiah, P. K., Dudzik, B., Grossi, D., Jonker, C. M., Oertel, C., and Yolum, P., "Toward a Quality Model for Hybrid Intelligence Teams", *23rd International Conference on Autonomous Agents and Multi-Agent Systems*, AAMAS (2024).
- [c2] D. Dell'Anna, N. Alechina, F. Dalpiaz, M. Dastani, and B. Logan, "Data-Driven Revision of Conditional Norms in Multi-Agent Systems (Extended Abstract)", *32nd International Joint Conference on Artificial Intelligence*, IJCAI (2023).
- [c3] D. Dell'Anna, N. Alechina, F. Dalpiaz, M. Dastani, M. Löffler, and B. Logan, "The Complexity of Norm Synthesis and Revision", *15th International Workshop on Coordination, Organizations, Institutions, Norms, and Ethics for Governance of Multi-Agent Systems*, COINE@AAMAS (2022).
- [c4] J. de Mooij, D. Dell'Anna, P. Bhattacharya, M. Dastani, B. Logan, S. Swarup, "Using Agent-Based Simulation to Investigate Behavioral Interventions in a Pandemic", *1st Workshop on Agent-based Modeling and Policy-Making*, AMPM@JURIX (2021).
- [c5] P. Bhattacharya, J. de Mooij, D. Dell'Anna, M. Dastani, B. Logan, S. Swarup, "PanSim + Sim-2APL: A Platform for Large-Scale Distributed Simulation with Complex Agents", *9th International Workshop on Engineering Multi-Agent Systems*, EMAS@AAMAS (2021).

- [c6] J. de Mooij, D. Dell’Anna, P. Bhattacharya, M. Dastani, B. Logan, S. Swarup, “Quantifying the Effects of Norms on COVID-19 Cases Using an Agent-based Simulation”, *22nd International Workshop on Multi-Agent Systems and Agent-Based Simulation*, MABS@AAMAS (2021).
- [c7] F. Dalpiaz, D. Dell’Anna, F.B. Aydemir, S. Çevikol, “Requirements Classification with Interpretable Machine Learning and Dependency Parsing”, *27th IEEE International Requirements Engineering Conference*, RE (2019).
- [c8] D. Dell’Anna, M. Dastani, and F. Dalpiaz, “Runtime Revision of Norms and Sanctions based on Agent Preferences (Extended Abstract)”, *31st Benelux Conference on Artificial Intelligence*, BNAIC (2019).
- [c9] D. Dell’Anna, M. Dastani, and F. Dalpiaz, “Runtime Revision of Norms and Sanctions based on Agent Preferences”, *18th International Conference on Autonomous Agents and Multiagent Systems*, AAMAS (2019). [Acceptance rate 24.2% ★]
- [c10] D. Dell’Anna, M. Dastani, and F. Dalpiaz, “Runtime Norm Revision Using Bayesian Networks”, *21st International Conference on Principles and Practice of Multi-Agent Systems*, PRIMA (2018).
- [c11] D. Dell’Anna, F. Dalpiaz, and M. Dastani, “Validating Goal Models via Bayesian Networks”, *5th International Workshop on Artificial Intelligence for Requirements Engineering*, AIRE (2018).
- [c12] D. Dell’Anna, “Requirements-Driven Supervision of Socio-Technical Systems”, *Dcotoral Symposium of the 24th International Conference on Requirements Engineering: Foundation for Software Quality*, REFSQ (2018).
- [c13] D. Dell’Anna, M. Dastani, and F. Dalpiaz, “Reasoning about Norms Revision”, *29th Benelux Conference on Artificial Intelligence*, BNAIC (2017).
- [c14] R. Aringhieri, D. Dell’Anna, D. Duma, and M. Sonnessa, “Evaluating the Dispatching Policies for a Regional Network of Emergency Departments Exploiting Health Care Big Data”, *3rd International Workshop on Machine Learning, Optimization, and Big Data*, MOD (2017).
- [c15] D. Dell’Anna, “Numerical and temporal planning for a multi-agent team acting in the real world”, *3rd Italian Workshop on Artificial Intelligence and Robotics*, AIRO@AI*IA (2016).