## Dr. Guglielmo Gemignani

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## Brief Research Statement

A highly experienced professional in the field of robotics and AI with over 10 years of experience programming robots and over 5 years of experience managing teams of engineers. Holds a PhD in Robotics and Artificial Intelligence and has strong technical and interpersonal skills. Has contributed to the field with over 20 academic publications and 2 patents, and has participated in European projects.

## Skills

**Management**: 5+ years. Trained in Agile Development, Nonviolent Communication, and Effective Leadership
**Programming**: 10+ years. Experience primarily with Python, C++, and Prolog in ROS
**Languages**: Italian (native), English (fluent), German (B2), French (A2)

## Employment Experiences

### MAGAZINO GMBH

**Head of Robotic Integration** (03/2022 - Present)
Disciplinary supervisor and technical lead of a team of 10+ developers in charge of robot architecture design, robot behaviors development and product QA. Additionally, responsible for a commercial Behavior Tree based framework, adopted by multiple multinational companies to develop behaviors for their autonomous robots.
*Keywords: VDA5050, Integrator CLI, SW & HW QA, Gazebo, GitLab, Docker, Podman, Behavior Trees.*

**Team Lead Behaviors & Reasoning** (01/2018 - 03/2022)
Disciplinary supervisor and technical lead of a team in charge of robot behaviors development, data analysis, and SW QA. The team contributed to the development of three products: TORU, SOTO, ACROS.AI.
*Keywords: Behavior trees, Automated planning, SW QA, Gazebo, Buildbot, Data Analysis, Pandas, Jupyter, GCP.*

**Senior Robotics Software Engineer** (02/2017 - 01/2018)
Responsible for the behaviors, navigation and deployment of TORU.
The robot won several awards, such as Best ROS Based Product 2020, Best product LogiMAT 2018, etc.
*Keywords: ROS, Behavior Trees, Django, Diagnostics, Prolog, Error modeling and Handling.*

**Robotics Software Engineer** (11/2015 - 02/2017)
Robot navigation and behavior developer.
*Keywords: ROS, Move Base, Topological graph planner, NetworkX, Django, Behavior Trees.*

## Additional Experiences

### Open and Closed Source Contributions

**Author/maintainer/contributor of various open and closed source projects**
*Repositories*: ros/diagnostics, UP4ROS2, pyswip, PetriNetPlans,
ros/geometry2, behavior_trees, robot_state_reasoning, topological_graph_planner, etc.

### Academic and Research Roles

**European Project Reviewer**
*Project Names*: SciRoc (EU-H2020 funded project)

**SPC, PC and Reviewer for various international conferences**
*Conferences*: IJCAI, ECAI, AI*IA, etc.

**International Research Project Contributor**
*Project Names*: AIPlan4EU (EU-H2020 funded project), RoboDevOps (Bavarian funded project)

### RoboCup 2013 Standard Platform League

**Team Leader and coordination and behaviors developer of the SPQR team**
Achieved 1st place at Iran Open 2013 & 3rd place at German Open 2013

## Education

### Carnegie Mellon University

**PhD Visitor**: CORAL Laboratory under the supervision of Prof. Manuela Veloso
*Visiting Period*: 09/2014 - 03/2015

### Sapienza - Università di Roma, Italy

**PhD in Robotics and Artificial Intelligence** (11/2012 - 02/2016)
*Title of the Thesis*: Acquiring Knowledge Through Multi-Modal Human-Robot Interaction
*Advisor*: Prof. Daniele Nardi

**Laurea Magistrale in Electronic Physics** (09/2010 - 10/2012)
*Title of the Thesis*: Study of the Readout System of a Microcapillary Position Detector Filled with Scintillating Liquid
*Grade*: 110/110 cum laude, excellence program

### Università degli Studi di Pisa, Italy

**Laurea Triennale in Physics** (09/2007 - 07/2010)
*Title of the Thesis*: Numerical Solution of the Unidimensional Scrödinger Equation

## Publications

### Journals, Book Chapters, and Patents

*Capabilities for error categorization, reporting and introspection of a technical apparatus*. **G. Gemignani**, M. Grimm, M. Tenorth. European Patent and Trademark Office, filed on August 8th, 2021.

*Controlling an apparatus, e.g., a robot, with a behavior tree*. **G. Gemignani**. European Patent and Trademark Office, filed on February 4th, 2021.

*Dialogue with Robots to Support Symbiotic Autonomy*. A. Vanzo, D. Croce, E. Bastianelli, **G. Gemignani**, R. Basili, D. Nardi. Dialogues with Social Robots, pp. 331-342, 2017.

*Living with Robots: Interactive Environmental Knowledge Acquisition*. **G. Gemignani**, R. Capobianco, E. Bastianelli, D. D. Bloisi, L. Iocchi, D. Nardi. Robotics and Autonomous Systems, RAS 2016.

### Conferences

*Planning for Automated Testing of Implicit Constraints in Behavior Trees*. U. Köckemann, D. Calisi, **G. Gemignani**, J. Renoux, and A. Saffiotti. International Conference on Automated Planning and Scheduling, ICAPS 2023.

*Automatic Extraction of Structural Representations of Environments*. R. Capobianco, **G. Gemignani**, D. D. Bloisi, D. Nardi, and L. Iocchi. Chapter in Intelligent Autonomous Systems 13, 2016.

*Multi-Robot Search for a Moving Target: Integrating World Modeling, Task Assignment and Context*. F. Riccio, E. Borzi, **G. Gemignani**, and D. Nardi. International Conference on Intelligent Robots and Systems, IROS 2016. **RoboCup Best Paper Award**.

*Multi-Robot Task Acquisition through Sparse Coordination*. S. Klee, **G. Gemignani**, M. Veloso, and D. Nardi. International Conference on Intelligent Robots and Systems, IROS 2015.

*Disambiguating Localization Symmetry through a Multi-Clustered Particle Filtering*. F. Previtali, **G. Gemignani**, L. Iocchi and D. Nardi. International Conference on Multisensor Fusion and Information Integration 2015.

*Graph-Based Task Libraries for Robots: Generalization and Autocompletion*. **G. Gemignani**, S. D. Klee, D. Nardi, and M. Veloso. AI*IA 2015.

*Approaching Qualitative Spatial Reasoning About Distances and Directions in Robotics*. **G. Gemignani**, R. Capobianco, and D. Nardi. AI*IA 2015.

*Language-Based Sensing Descriptors for Robot Object Grounding*. **G. Gemignani**, M. Veloso, and D. Nardi. RoboCup Symposium 2015. **Best Paper Award**.

*Context-based Coordination for a Multi-Robot Soccer Team*. F. Riccio, E. Borzi, **G. Gemignani**, and D. Nardi. RoboCup Symposium 2015.

*On Task Recognition and Generalization in Long-Term Robot Teaching (Extended Abstract)*. **G. Gemignani**, S. Klee, M. Veloso, and D. Nardi. 14th International Conference on Autonomous Agents and Multiagent Systems, AAMAS 2015.

*Teaching Robots Parametrized Executable Plans Through Spoken Interaction*. **G. Gemignani**, E. Bastinaelli, and D. Nardi. 14th International Conference on Autonomous Agents and Multiagent Systems, AAMAS 2015.

*Automatic Extraction of Structural Representations of Environments*. R. Capobianco, **G. Gemignani**, D. Bloisi, D. Nardi, and L. Iocchi. 13th International Conference on Intelligent Autonomous Systems, IAS 2014.

*On-line Semantic Mapping*. E. Bastianelli, D. Bloisi, R. Capobianco, F. Cossu, **G. Gemignani**, L. Iocchi, and D. Nardi. 16th International Conference on Advanced Robotics, ICAR 2013.

## WORKSHOPS

*Dialog with Robots to Support Symbiotic Autonomy*. D. Nardi, R. Basili, E. Bastianelli, D. Croce, **G. Gemignani**, A. Vanzo. In Proceedings of the 7th International Workshop on Spoken Dialog Systems, 2016.

*Contexts for Symbiotic Autonomy: Semantic Mapping, Task Teaching and Social Robotics*. R. Capobianco, **G. Gemignani**, L. Iocchi, D. Nardi, F. Riccio, and A. Vanzo. In Proceedings of the AAAI'16 Workshop on Symbiotic Cognitive Systems, 2016.

*Interactive Semantic Mapping: Experimental Evaluation*. **G. Gemignani**, D. Nardi, D. D. Bloisi, R. Capobianco, and L. Iocchi. Springer Tracts in Advanced Robotics, Experimental Robotics, 2016.

*Multi Robot Perception and Action: World Modeling and Task Allocation*. F. Riccio, M. T. Lazáro, **G. Gemignani**, and D. Nardi. RSS 2015 Workshop Principle of multi-robot systems.

*Task Recognition and Generalization in Long-Term Robot Teaching*. **G. Gemignani**, S. Klee, M. Veloso, and D. Nardi. Autonomous Robots and Multirobot Systems, ARMS 2015.

*Symbiotic Semantic Mapping*. **G. Gemignani** , D. Nardi, D. D. Bloisi, R. Capobianco, and L. Iocchi. International Symposium on Experimental Robotics, ISER 2014.

*Knowledge-Based Reasoning on Semantic Maps*. R. Capobianco, **G. Gemignani**, D. Nardi, D. Bloisi, and L. Iocchi. Knowledge Representation and Reasoning in Robotics Symposium at AAAI Spring Symposium, 2014.

*Knowledge Representation for Robots through Human-Robot Interaction*. E. Bastianelli, D. Bloisi, R. Capobianco, **G. Gemignani**, L. Iocchi, and D. Nardi. Knowledge Representation and Reasoning in Robotics Workshop at $29^{th}$ International Conference on Logic Programming, 2013.