

## PERSONAL INFORMATION

## ANTONELLO CHERUBINI

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Date of birth 29/12/1987 | Nationality Italian

## SUMMARY

Assistant professor (RTDA-PON) at the University of Trento

h-index: 5 – citations: 487 (Scopus) – (Scholar h-index: 8)  
7 journal papers; 1 book chapter; 3 conference papers; 3 patent applications

## EDUCATION

2013 – 2017 **PhD with honours at the PERCRO robotics laboratory – ING-IND/13**  
Sant'Anna University of Pisa

- PhD dissertation awarded the prize Bernardo Nobile 2017.

2007 – 2012 **Master's and bachelor's degree in mechanical engineering**  
Politecnico di Milano

- Master's rank 110/110, bachelor's rank 110/110
- Winner of the Tenaris scholarship in 2012

## RESEARCH EXPERIENCE

01.2022 – 12.2024 **Assistant professor (RTDA PON ING-IND/13) at the University of Trento**

- Research activities in autonomous driving at the of the University of Trento in cooperation with [Fiat Research Centre, Stellantis](#).
- I migrated the group's entire agent from Simulink to C++, achieving 10x simulation speed and allowing better technical scalability of the agent.
- I wrote a high-level TCL test program with 100+ unit tests that allows to monitor the performance of the agent and makes sure that the agent always meets the safety and performance criteria.
- I teach "Elementi di meccanica" at the University of Verona (laurea interateneo).

2018 and 2021 **Research fellow, University of Pisa**

- I wrote a [project proposal](#) for an Oil & Gas multinational company.
- I programmed a simulator for hydrogen permeation through steel. The software integrated numerically the MacNabb and Foster diffusion model and replaced the previous software that was used by the research team.
- I set up a Siemens server to allow an autonomous testing machine to be operated remotely at the customers' facilities. This allowed remote operations for the first time.
- I contributed significantly to a publication in a high-ranking Journal.

2018 **Consulting (conto terzi), Sant'Anna University of Pisa**

- I performed the [thermal and mechanical design](#) of a remote vision system featuring 360 deg FOV with active stabilization for an autonomous ship to be operated in the south Mediterranean sea.

## 2016 Research fellow, TU Delft

- During my PhD secondment, I performed experimental research in Airborne Wind Energy at the aerospace department of the Technical University of Delft, The Netherlands under the supervision of Prof. Roland Schmehl.

## 2013 – 2017 Research fellow, Sant'Anna University of Pisa

- During my PhD, I carried out theoretical and experimental research in Airborne Wind Energy and Nylon Coil Actuators at the Perceptual Robotics laboratory.
- In 2016 one of my journal papers ranked 13th as most downloaded paper ever of the [class A journal](#) "Renewable and sustainable energy reviews" and it is still the [most cited](#) of my tutor's papers. I wrote the paper and contacted tens of researchers and companies. Thanks to this paper I was asked for a [technical opinion on a Google project by the Financial Times \(link\)](#).

## TEACHING EXPERIENCE

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|-----------|--|
| 2022-2024 | Exercise classes of " <a href="#">Elementi di meccanica e laboratorio</a> " to bioengineering students at the University of Verona (laurea triennale interateneo Trento-Modena-Verona)   |
| 2024      | "Simulating autonomous car dynamics with CarMaker", <a href="#">PhD course</a> , University of Trento.   |
| 2023      | "Mechanical Safety and Risks" at new staff members and PhD students, University of Trento.   |
| 2022-2024 | Complementary course "Project management with Jira and Trello", University of Trento.  |
| 2017      | "Fundamentals of Airborne Wind Energy Systems" at Universidad Carlos III de Madrid. 1 cfu course held with Prof. Gonzalo Sanchez Arriaga. The course was sponsored by the EU and covered the theoretical foundations of airborne wind energy together with relevant industrial examples. |
| 2015      | Exercise classes on SMAs in the course given by Prof. Marco Fontana at the University of Pisa. Tutoring of 3 master's theses.  |

## OTHER WORK EXPERIENCE

## 2020-2021 Technical consultant in road accidents, Tribunale di Pisa

- I served as technical consultant (C.T.U.) for several judges at the Court of Pisa.
- I had a strong [responsibility](#) in the final determination of compensations.
- Analysis of car accidents and road fatalities.
- Estimation of material damages on vehicles.

## 2018 - 2021 R&amp;D engineer at VRmedia S.r.l., Venture Capital project, Pisa

- I gave my contribution to the design of a smart helmet for remote assistance with augmented reality capabilities, in close cooperation with the CEO and the CTO. We started the product design from scratch in 2018 and the company is now producing and selling hundreds of units per year.
- I had an important role in the technical office, sometimes persuading the whole R&D team to steer its activities thanks to my technical reports.
- I designed, prototyped and engineered the enclosures that are certified antistatic and splash proof, [IP65](#), [ATEX1](#). The enclosures included anti-static plastics, gorilla glasses, epdm gaskets, IR transparent glasses, dome buttons and waterproof connectors.
- I am author of a company's patent application.

## 2016 Test engineer at Cheros Srl, Pisa

- I wrote a project proposal for the [H2020 SME instrument](#).
- I programmed an extensive unit testing program for a server for the mobile hospital of MotoGP. The program made sure that the reservations of the pilots and other patients were handled properly. Programming language: Python

## 2012 - 2013 R&amp;D engineer at Kitegen S.r.l., Venture Capital project, Turin

- Feasibility analysis and design of a low-strain pulley for a large scale experimental ground-gen airborne wind energy generator. Structural analysis: Matlab

## LANGUAGE SKILLS

	LISTENING	READING	SPOKEN	WRITING	CERTIFICATE
Italian	C2	C2	C2	C2	Native
English	C2	C2	C1	C2	<a href="#">IELTS ACADEMIC C2 8/9</a>
French	B1	B2	B1	A2	DELTA A2
German	A1	A1	A1	A1	
Chinese	A1	A1	A1	A1	HSK ELEM. C 3/11

## PROGRAMMING AND IT

Automotive	CarMaker
Programming	Scientific calculus: Matlab, Simulink, Mathematica C++, Bash, tcl Web design - html 5, css, javascript Python, Django Version control: git
Embedded	C++
Engineering	CAD: Autodesk Inventor, Fusion360, Solidworks, SolidEdge; FEM: Abaqus; Labview: Core1
Prototyping	Prusa Slicer, ST Cube IDE, Arduino IDE, real time data acquisition
ERP CRM	Odoo, Jira
OS and office	Windows, Android, Ubuntu, MS Office, Latex

## OTHER EXPERIENCE

2019	I was asked for a technical opinion on a Google project by the <a href="#">Financial Times (link)</a>
2017	Presentation at TEDx Sant'Anna, Pisa, "The hidden power of students", <a href="#">Video link</a>
2017	Developer of the non-profit website <a href="#">tueamore.org</a> for housing of cancer patients. The project has helped 3000 people to find accommodation in 90 facilities and has a partnership with Trenitalia

## TOP THREE PUBLICATIONS

- |                          |   |               |
|--------------------------|---|---------------|
| 2015<br>Attachment n. 01 | A. Cherubini, A. Papini, R. Vertechy, M. Fontana, "Airborne Wind Energy Systems: A review of the technologies" <i>Renewable and Sustainable Energy Reviews</i> 51, 1461-1476.<br>Contribution: I carried out a massive literature review. I contacted tens of scientists and professionals. I wrote most of the paper. This is still the <a href="#">most cited paper of the field</a> when looking for Airborne Wind Energy in Scopus. | 229 Citations |
| 2019<br>Attachment n. 02 | S. Watson et al, "Future emerging technologies in the wind power sector: A European perspective", <i>Renewable and Sustainable Energy Reviews</i> 113, 109-270<br>Contribution: I wrote a section that the main authors decided to put at the beginning of the paper.   | 139 Citations |
| 2015<br>Attachment n. 03 | A. Cherubini, G. Moretti, R. Vertechy, M. Fontana, "Experimental Characterization of Thermally-Activated Artificial Muscles based on Coiled Nylon Fishing Lines", <i>AIP Advances</i> 5 (6), 067158<br>Contribution: I built the experimental test bench. I performed many experiments. I contributed substantially to writing the paper.   | 80 Citations  |

## OTHER PUBLICATIONS

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|--------------------------|--|
| 2023<br>Attachment n. 04 | Alexandra Velasco Vivas, Antonello Cherubini, Manolo Garabini, Paolo Salaris, Antonio Bicchi, "Minimizing Energy Consumption of Elastic Robots in Repetitive Tasks", <i>IEEE Transactions On Systems, Man, And Cybernetics: Systems</i> , 2023<br>Contribution: I restructured and rewrote most of this paper so that it could match the quality standards of the journal.   |
| 2023<br>Attachment n. 05 | Da Lio, M., Cherubini, A., Rosati Papini, G.P., Plebe, A., "Complex self-driving behaviors emerging from affordance competition in layered control architectures" <i>Cognitive Systems Research</i> , 2023, 79, pp. 4–14<br>Contribution: I developed a significant portion of the autonomous driving simulator that is used by the research group and I performed the simulations. See "Research Experience" paragraph. I reviewed the paper.                                     |
| 2023<br>Attachment n. 06 | Cherubini, A., Rosati Papini, G.P., Plebe, A., Da Lio, M., "Energy Costs of Safe Speed Policies in a Pedestrian-Crossing Scenario", <i>2023 IEEE Intelligent Vehicles Symposium (IV)</i> , Anchorage USA, 2023<br>Contribution: I developed a significant portion of the autonomous driving simulator that is used by the research group and I performed the simulations. See "Research Experience" paragraph. I wrote the section "Energy cost estimation". I reviewed the paper. |
| 2022<br>Attachment n. 07 | Plebe, A., Rosati Papini, G.P., Cherubini, A., Da Lio, M., "Distributed cognition for collaboration between human drivers and self-driving cars", <i>Frontiers in Artificial Intelligence</i> , 2022, 5, 910801<br>Contribution: I developed a significant portion of the autonomous driving simulator that is used by the research group and I performed the simulations. See "Research Experience" paragraph. I reviewed the paper.  |
| 2018<br>Attachment n. 08 | Antonello Cherubini, Linda Bacchi, Serena Corsinovi, Marco Beghini, Renzo Valentini, "Hydrogen Embrittlement in Advanced High Strength Steels and Ultra High Strength Steels: a new investigation approach", <i>ECF22, Belgrade</i><br>Contribution: I performed the hydrogen diffusion experiments. I compared the results with the analytical solution by performing the simulations. I wrote the paper.   |
| 2017<br>Attachment n. 09 | Antonello Cherubini, "Advances in Airborne Wind Energy and Wind Drones", <i>PhD Thesis, Sant'Anna University of Pisa</i><br>Contribution: My PhD thesis was awarded the prize Bernardo Nobile in 2017.   |
| 2016<br>Attachment n. 10 | A. Cherubini, R. Vertechy, M. Fontana, "Dynamic Modeling of Floating Offshore Airborne Wind Energy Converters", (book chapter in the second edition of the AWE Book, R. Schmehl Ed.)<br>Contribution: I wrote the dynamic model, I performed the simulations and I wrote the paper.  |
| 2015<br>Attachment n. 11 | A. Cherubini, R. Vertechy, M. Fontana, "Simplified Model of Offshore Airborne Wind Energy Converters", <i>Renewable Energy</i><br>Contribution: I performed the simulations and I wrote the paper.   |
| 2015<br>Attachment n. 12 | G. Moretti, A. Cherubini, R. Vertechy, M. Fontana, "Experimental characterization of a new class of polymeric-wire coiled transducers", <i>SPIE Smart Structures, San Diego</i><br>Contribution: I built the experimental test bench. I performed many experiments. I contributed substantially to writing the paper.  |

## PATENTS

- 2021     *Tecchia F., Carrozzino M., Bacinelli S., Cherubini A., "Sistema per realtà aumentata", patent application*  
Contribution: I gave a fundamental contribution to the overall product development and I contributed substantially to writing and reviewing the patent.
- 2017     *A. Cherubini, G. Moretti, M. Fontana, "Sistema aereo di captazione eolica d'alta quota per generatore eolico", patent application*  
Contribution: I came up with the idea. I reviewed the patent.
- 2013     *A. Cherubini, M. Ippolito, "Puleggia perfezionata per verricello ad alta efficienza", patent application ITTO20130365.*  
Contribution: I took part to the brainstorming that led to the idea. I performed the structural simulations.

Trento, 10<sup>th</sup> Jun 2024  
Antonello Cherubini