

# Ernesto Casablanca

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📱 tendto

## Introduction

I'm passionate about the entire IT sector, in all its ramifications, but I admit to having a soft spot for software development, with a particular focus on best practices, design patterns, CI/CD processes, and, more generally, everything related to the world of cloud computing. My curiosity has driven me to explore a wide range of sectors, gaining transversal knowledge that I'd like to leverage to the fullest. I'm currently pursuing a PhD in Computer Science at Newcastle University, with a focus on formal verification, both in the context of SMT solvers and cyberphysical systems.

## Education

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| <b>PhD</b> <b>Newcastle University</b> , Computer Science             | <ul style="list-style-type: none"> <li>• <i>Research topics</i>: Formal verification (SMT in the QF_LRA theory) and safety of cyberphysical systems</li> <li>• <i>EQF level</i>: 8</li> <li>• <i>NQF level</i>: 3rd cycle degree (PhD/Doctorate)</li> </ul>                                                                                                                                                      | Newcastle upon Tyne, UK<br>Sept 2023 – present |
| <b>MS</b> <b>Università degli Studi di Catania</b> , Computer Science | <ul style="list-style-type: none"> <li>• <i>Final degree mark</i>: 110/110 cum laude</li> <li>• <i>Thesis</i>: Analysis of the SMT delta-solver dLinear4 software aimed at improving efficiency and usability</li> <li>• <i>Advisors</i>: Prof. Emiliano Tramontana, Prof. Andrea Calvagna</li> <li>• <i>EQF level</i>: 7</li> <li>• <i>NQF level</i>: 2nd cycle degree/Master of Science (2 years)</li> </ul>   | Catania, IT<br>Sept 2021 – Sept 2023           |
| <b>BS</b> <b>Università degli Studi di Catania</b> , Computer Science | <ul style="list-style-type: none"> <li>• <i>Final degree mark</i>: 110/110 cum laude</li> <li>• <i>Thesis</i>: Decentralization of the energy market</li> <li>• <i>Advisors</i>: Prof. Giuseppe Pappalardo, Dott. Giovanni Marotta</li> <li>• <i>Archimede Prize</i> for an excellent academic career</li> <li>• <i>EQF level</i>: 6</li> <li>• <i>NQF level</i>: 1st cycle degree/Bachelor (3 years)</li> </ul> | Catania, IT<br>Sept 2018 – Sept 2021           |

## Experience

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| <b>SymAware</b> , Lead Software Engineer<br>Lead software engineer performing the integration of the components from all the consortium partners in the SymAware project, a <a href="#">Horizon Europe funded</a> project aimed at developing a symbiotic autonomous driving system. | <ul style="list-style-type: none"> <li>• <i>Tech stack</i>: Python, ROS, Docker, Git, Gurobi, Prescan, CARLA, pybullet, MATLAB, C++</li> <li>• <i>Partners</i>: MPI-SWS, KTH, TU/E, Uppsala University, Siemens, NLR</li> </ul> | Newcastle upon Tyne, UK<br>Jan 2024 – Apr 2026<br>2 years 4 months |
| <b>Newcastle University</b> , Demonstrator<br>Mentored students in the undergraduate modules <a href="#">CSC2034</a> , <a href="#">CSC1033</a> , <a href="#">CSC8017</a> , <a href="#">CSC3631</a> , <a href="#">CSC8110</a> , <a href="#">CSC3231</a> , <a href="#">CSC3432</a>     | <ul style="list-style-type: none"> <li>• <i>Tech stack</i>: Unity, C#, Python, matplotlib, networkx, sklearn, pandas, numpy, seaborn, Jupyter, MySQL</li> </ul>                                                                 | Catania, IT<br>Feb 2024 – Dec 2025<br>1 year 11 months             |

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| <b>Università degli Studi di Catania</b> , Tutor<br>Mentored students in the undergraduate courses ‘Reti di Calcolatori (Networks)’ and ‘Ingegneria del Software (Software Engineering)’.<br><ul style="list-style-type: none"> <li>• <i>Tech stack</i>: C, Java, Javascript, Reveal.js</li> </ul>                                                                                                                                                                                                                       | Catania, IT<br>Sept 2022 – June 2023<br>10 months      |
| <b>CTmobi</b> , Software Engineer<br>Design and implementation of WordPress themes and plugins, <a href="#">frontend carousel</a> and back-end management SPA on behalf of <a href="#">networkdigital360</a> , analysis and security audit of the code, debugging and optimization of web applications<br><ul style="list-style-type: none"> <li>• <i>Tech stack</i>: PHP, Javascript, CSS, HTML, MySQL, WordPress, AWS, CloudFormation, API Gateway, DynamoDB, REST APIs, JWT, Git, Chrome Dev Tools, Docker</li> </ul> | Catania, IT<br>Nov 2021 – May 2022<br>7 months         |
| <b>Università degli Studi di Catania</b> , Research Assistant<br>Research and investigation on the application of blockchain technology for trustworthiness in distributed energy production scenarios, funded by Prot. n. 0790700, 18/10/2021.<br><ul style="list-style-type: none"> <li>• <i>Tech stack</i>: Typescript, React, Hardhat, Solidity, Electron</li> </ul>                                                                                                                                                 | Catania, IT<br>Jan 2021 – Sept 2022<br>1 year 9 months |
| <b>Freelance</b> , Software Engineer<br>Telegram bot development and maintenance for small businesses<br><ul style="list-style-type: none"> <li>• <i>Tech stack</i>: Python, Telegram Bot API, Heroku, MySQL</li> </ul>                                                                                                                                                                                                                                                                                                  | Catania, IT<br>Apr 2021 – Nov 2021<br>8 months         |

## Activities

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| <b>The 40th Annual AAAI Conference on Artificial Intelligence</b><br>Gave an <a href="#">oral presentation</a> and presented a poster for the paper ‘LUCID: Learning-Enabled Uncertainty-Aware Certification of Stochastic Dynamical Systems’.          | Singapore, SG<br>Jan 2026          |
| <b>HackTheBurgh XII</b><br>Attended the 12th edition of the HackTheBurgh Hackathon.<br><ul style="list-style-type: none"> <li>• <i>Result</i>: <a href="#">Insider tracker</a> (<b>winner</b> in the Q-Research competition)</li> </ul>                 | Edinburgh, UK<br>Nov 2025          |
| <b>UK Quantum Hackathon</b><br>Attended the 2025 <a href="#">NQCC</a> ’s Quantum Hackathon.<br><ul style="list-style-type: none"> <li>• <i>Result</i>: Closure Optimisation for Road Network Maintenance (<b>winner</b>)</li> </ul>                     | Edinburgh, UK<br>Aug 2025          |
| <b>Formula Student AI</b><br>Attended the 2025 <a href="#">IMECHE</a> Formula Student AI competition at Silverstone Circuit with the Newcastle University team.<br><ul style="list-style-type: none"> <li>• <i>Result</i>: <b>23rd</b> place</li> </ul> | Silverstone, UK<br>July 2025       |
| <b>Drive Forward 2025</b><br>Presented a live demo of the SymAware framework.                                                                                                                                                                           | Eindhoven, Netherlands<br>Apr 2025 |
| <b>HackTheBurgh X</b><br>Attended the 10th edition of the HackTheBurgh Hackathon.<br><ul style="list-style-type: none"> <li>• <i>Result</i>: <a href="#">plantgurdian</a></li> </ul>                                                                    | Edinburgh, UK<br>Mar 2024          |
| <b>DURHACK</b><br>Attended the 2023 edition of the Durham University Hackathon.<br><ul style="list-style-type: none"> <li>• <i>Result</i>: <a href="#">Immersio</a></li> </ul>                                                                          | Durham, UK<br>Nov 2023             |

## CyberChallenge.IT

Attended the 2023 edition of the Italian Cybersecurity Challenge, a national competition organized by the [Cybersecurity National Lab](#) of [CINI](#) with the support of the [Italian National Cybersecurity Agency](#).

- *Result:* **1st** place in the local competition, qualifying for the national competition
- *Result:* **12th** place in the national competition

Turin, IT  
June 2023

## BLOCKchain for Renewables INTEGRation 2022 Workshop

Gave an oral presentation for the paper 'Providing Trust in a Dynamic Distributed Energy Production Scenario by means of a Blockchain'.

Palermo, IT  
Sept 2022

## Projects

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### LUCID

Lifting-based Uncertain Control Invariant Dynamics (LUCID) tool.

- *Tech stack:* C++, Python, Typescript, React, MATLAB, Starlark, Bazel, numpy, SciPy, pybind11, emscripten, Docker

### rules\_doxygen

Bazel rules for generating Doxygen documentation.

- *Tech stack:* Bazel, Starlark, Doxygen

### IAC-VPN

Infrastructure as Code VPN solution to automatically deploy a VPN server on the cloud.

- *Tech stack:* Terraform, Ansible, Bash, AWS, GCP, OpenStack, Oracle Cloud

### Dotingestion2

ETL pipeline for analysis of data coming from the [DOTA 2](#) game.

- *Tech stack:* Python, Java, Kafka, Spark, Cassandra, express.js, Elasticsearch, Kibana, Docker, Kubernetes

### Quantum random walk simulation

Study of quantum random walks using [Qiskit](#)

- *Tech stack:* Python, Qiskit, Jupyter

### Linear System Solver

GPU parallelized implementation of a Gaussian elimination linear system solver.

- *Tech stack:* C, OpenCL

### Telegram SpottedDMI Bot

Telegram bot behind [@Spotted\\_DMI\\_Bot](#), used by the computer science students in Catania.

- *Tech stack:* Python, Telegram Bot API, SQLite

## Publications

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### LUCID: Learning-Enabled Uncertainty-Aware Certification of Stochastic Dynamical Systems

Mar 2026

Toolbox for the data-driven formal verification of stochastic dynamical systems.

**Ernesto Casablanca**, Oliver Schön, Paolo Zuliani, Sadegh Soudjani

[10.1609/aaai.v40i24.39075](#) (AAAI 2026)

## Blending Participatory Design and Artificial Awareness for Trustworthy Autonomous Vehicles

Nov 2025

Data-driven model of a human driver grounding via a large-scale user-centered study on human-AV interaction.

Ana Tanevska, Ananthapathmanabhan Ratheesh Kumar, Arabinda Ghosh, **Ernesto Casablanca**, Ginevra Castellano, Sadegh Soudjani

[10.1109/RO-MAN63969.2025.11217774](https://arxiv.org/abs/10.1109/RO-MAN63969.2025.11217774) (RO-MAN 2025)

## SymAware: A Software Development Framework for Trustworthy Multi-Agent Systems with Situational Awareness

Sept 2024

Software framework for developing trustworthy multi-agent systems with situational awareness.

**Ernesto Casablanca**, Zengjie Zhang, Gregorio Marchesini, Sofie Haesaert, Dimos V. Dimarogonas, Sadegh Soudjani

[10.48550/arXiv.2409.14833](https://arxiv.org/abs/10.48550/arXiv.2409.14833) (arXiv preprint)

## Providing Trust in a Dynamic Distributed Energy Production Scenario by means of a Blockchain

Feb 2023

Study on the application of blockchain technology for trustworthiness in dynamic distributed energy production scenarios.

Andrea Calvagna, **Ernesto Casablanca**, Giovanni Marotta, Giuseppe Pappalardo, Emiliano Tramontana

[10.1109/BLORIN54731.2022.10028019](https://arxiv.org/abs/10.1109/BLORIN54731.2022.10028019) (BLORIN 2022)

## Skills

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**Spoken Languages:** Italian (Native), English (C1), Chinese (Beginner)

**Programming Languages:** Python, C++, C, C#, Java, JavaScript, Typescript, PHP, SQL, Bash, GDScript, MATLAB, OpenCL, CUDA, Solidity, Kotlin

**Cloud:** Kubernetes, AWS, GCP, Azure, Docker, Terraform, Ansible, GitHub Actions, CloudFormation

**Frameworks and Libraries:** NumPy, matplotlib, Pandas, SciPy, GMP, ROS, React, Astro

**Tools:** Git, GitHub, Docker, LaTeX, Jupyter, VS Code, CLion, Bazel, WordPress, Godot, Unity, Prescan, CARLA, pybullet, Tamarin, Mermaid, Kafka, Spark

**Databases:** SQLite, MySQL, PostgreSQL, MongoDB, DynamoDB, Cassandra

## Accreditations

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- Google IT Support (2020) - [Certificate](#)
- AWS Partner: Technical Accredited (2021) - [Badge](#)
- IELTS Academic, Band 8 (C1), British Council (2023) - [TRF number: 22IT005503CASE264A](#)

## Videogames

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**Without roots**, *Tower defense*

Aug 2021

**Ernesto Casablanca**, Corrado Crisafulli, Alice Bivona, Matteo Franchetti

**Deep down**, *Platformer*

Feb 2021

**Ernesto Casablanca**, Corrado Crisafulli, Alice Bivona

**Moonlight**, *Puzzle, Platformer*

Aug 2020

**Ernesto Casablanca**, Corrado Crisafulli