



ADRIÀ TORRALBA-AGELL

PhD Candidate - Applied Cryptography on Blockchain

0xAdriaTorralba.github.io atorralbaag@uoc.edu 0000-0002-1889-3404
 0xAdriaTorralba @0xAdriaTorralba AdriaTorralba Barcelona, Spain

INTERESTS

Abstract Algebra
Zero-Knowledge Cryptography
Blockchain Scalability
Interactive Proof Systems
Blockchain Security
Data Visualisation

TECH STACK

Solidity Java
C++ C# Python
Javascript HTML5
WebGL Bash
R OpenGL
LaTeX PostgreSQL
Rust MatLab C
Assembler Cairo
React.js Ruby on Rails
Docker

LANGUAGES

Catalan: Native / C1

Spanish: Native

English: Intermediate / B2 (FCE)

REFERENCES

Dra. Cristina Pérez-Solà
 cristina.perez@uab.cat

Dr. David Megías
 dmegias@uoc.edu

EDUCATION

MSc in Fundamental Principles of Data Science | [Universitat de Barcelona](#)
 2020 – 2021 Barcelona, Spain

Double BSc in Mathematics and Computer Science | [Universitat de Barcelona](#)
 2013 – 2020 Barcelona, Spain

PUBLICATIONS

Adrià Torralba-Agell, Ghazaleh Keshavarzkalhori, Cristina Pérez-Solà, David Megías, and Jordi Herrera-Joancomartí. “Unmasking the Illusion: The Shortcomings of “Zero-Knowledge” Rollups in Achieving Scalability”. In: *Reunión Española sobre Criptología y Seguridad de la Información* (2024)

Stefanos Chaliasos, Itamar Reif, Adrià Torralba-Agell, Jens Ernstberger, Assimakis Kattis, and Benjamin Livshits. “Analyzing and Benchmarking ZK-Rollups”. In: *Advances in Financial Technologies* (2024)

Adrià Torralba-Agell and Cristina Pérez-Solà. “A Taxonomy of Security Analysis of Blockchain Layer 2 Scalability Solutions and Future Directions (submitted, under review)”. In: *Blockchain: Research and Applications* (2024)

Adrià Torralba-Agell and Cristina Pérez-Solà. “A Comparison of Layer 2 Techniques for Scaling Blockchains”. In: *Reunión Española sobre Criptología y Seguridad de la Información* 265 (2022)

Ecem Kavaz, Anna Puig, Inmaculada Rodríguez, Adrià Torralba-Agell, Reyes Chacón, David De-La-Paz, Montserrat Nofre, and Mariona Taule. “Visualisation of hierarchical multivariate data: Categorisation and case study on hate speech”. In: *Information Visualization* 22.1 (2023), pp. 31–51

Adrià Torralba-Agell, Marcos Moreno Blanco, Pere Gilabert-Roca, and Santi Seguí. “Twitter engagement model for RecSys Challenge 2021”. In: *Universitat de Barcelona* (2021)

Adrià Torralba-Agell, Anna Puig, and Núria Fagella. “Iteration of holomorphic functions and visualisation of fractals”. In: *Universitat de Barcelona* (2020)

TALKS

Zero-Knowledge for Privacy, Succinct for Scalability | |
 April. 2024 Privacy Reunion II, Barcelona (Spain)

A Taxonomy of Security Analysis of Blockchain Later 2 Scalability Solutions and Future Directions | |
 April. 2024 Web3 Family Conference 3, Barcelona (Spain)



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Security Analysis of Layer 1 and Layer 2 Extensions |

📅 Feb. 2024

📍 Ethereum Dev Barcelona Meetup, Barcelona (Spain)

Reality and Adoption of Blockchain Technology | |

📅 Aug. 2023

📍 Online

Hand-on Zero-Knowledge Basics - KZG Commitments | | |

📅 Jul. 2023

📍 ETHBarcelona 2023, Barcelona (Spain)

A Comparison of Layer 2 Techniques for Scaling Blockchains | |

📅 Oct. 2022

📍 RECSI 2022, Santander (Spain)

A Comparison of Layer 2 Techniques for Scaling Blockchains (Preliminary Work) | |

📅 Jul. 2022

📍 Advances in Blockchain Technologies (UPF)

PROJECTS

Délégative | |

📅 Jul. 2023

📍 Paris, France

Hackathon project at EthGlobal Paris 2023 that implemented an off-chain DAO liquid democracy voting application with identity proofs and vote delegations. We won 1st place from ApeCoinDAO, Top 5 from Sismo and Pool Prize for The Graph

The Sand Walker | |

📅 Jun. 2023

📍 Prague, Czech Republic

Hackathon project at EthPrague 2023 that took as inspiration Ethernauts project to learn Solidity, and adapted that to learn Cairo 1!

Data Visualisation in Linguistics |

📅 Jan. 2021 – Sep. 2021

📍 Universitat de Barcelona

Visualisation of toxicity in Social Networks made with Django, Highcharts and D3.js

Twitter 2021 RecSys Challenge |

📅 Jun. 2021

📍 Universitat de Barcelona

Implementation of a Recommender System that predicts interactions for Twitter Users. We have reached 14th place overall, and 8th position in Like leaderboard

Yet Another Fractal Explorer | |

📅 2020

📍 Universitat de Barcelona

Final double BSc project about Visualisation of Fractals made with Unity3D.



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EXPERIENCE

PhD Candidate | [Universitat Oberta de Catalunya](#)

📅 Dec. 2021 – Present

📍 Barcelona, Spain

PhD on Cryptography and Blockchain

Researcher | [Universitat de Barcelona](#)

📅 Sep. 2021

📍 Barcelona, Spain

Data Visualisation in Linguistics Project

Researcher Assistant | [Universitat de Barcelona](#)

📅 Jan. 2021 – Jun. 2021

📍 Barcelona, Spain

Creation of a Website that allows the easily Visualise toxicity on Social Media

Teaching Assistant at Programming I & II | [Universitat de Barcelona](#)

📅 Oct. 2019 – Jun. 2020

📍 Barcelona, Spain

Teaching Object-Oriented Programming (OOP) in Java

Big Data and Artificial Intelligence Intern | [everis](#)

📅 Oct. 2018 – Aug. 2019

📍 Barcelona, Spain

Documentation of Big Data technologies, participation on a Data Churn project and creation of Visualisation Dashboards using Matplotlib and Plotly

OTHER ACTIVITIES

1st position BikeTrial Catalan's Championship and Maresme's Championship 📅 2011 📍 Spain

2nd position BikeTrial Catalan's Championship and Osona's Championship 📅 2009 📍 Spain