



PATRICIA GUERRA BALBOA

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EDUCATION

Master of Science in Mathematics

University of Santiago de Compostela

Sep. 2020 – July 2021

Santiago de Compostela, Spain

Bachelor's Degree in Mathematics

University of Santiago de Compostela

Sep. 2016 – July 2020

Santiago de Compostela, Spain

WORK EXPERIENCE

PhD Student Researcher

Chair of IT Security (PS), Karlsruhe Institute for technology

October 2021 – Nowadays

Karlsruhe, Germany

- Trajectory data privacy, theoretical aspects of data privacy and statistical disclosure control, Differential Privacy.

High-level research technician

Universitat Politècnica de Catalunya

July 2021 – September 2022

Barcelona, Spain

- Short-term research project about Generating Synthetic Data with Differential Privacy Guarantees.

High-level research technician

University of Santiago de Compostela

March 2021 – July 2021

Santiago de Compostela, Spain

- Studying and analysis of localization and cohomology on quasicohherent sheaves on schemes and associated spaces. Presentation about schemes package on Lean library

Intern

Kidcode S.L.

July 2019 – August 2019

Vigo, Spain

- Scientific divulgator and teacher

HONORS AND AWARDS

Best Poster Award Community Congress by Startup Secure

K.I.T. Gründer Schmiede

2023

"Mellores expedientes" (Best records) Recognition

University of Santiago de Compostela

2016

TEACHING EXPERIENCE

Teaching Assistance

Seminar Privacy und Technischer Datenschutz

Master's course in IT Security

Summer Semester 2022

Karlsruhe Institute for technology

Reading-Group Privacy Enhancing Technologies

Master's course in IT Security

Summer Semester 2022

Karlsruhe Institute for technology

Lecture on Trajectory Privacy

as part of the Lecture Series Privacy Enhancing Technologies (Master's course)

Summer Semester 2022

Karlsruhe Institute for technology

Seminar Privatsphäre und Sicherheit

Master's course in IT Security

Winter Semester 2022/23

Karlsruhe Institute for technology

Seminar Privacy und Technischer Datenschutz

Master's course in IT Security

Summer Semester 2023

Karlsruhe Institute for technology

Lectures on Differential Privacy

as part of the Lecture Series Privacy Enhancing Technologies (Master's course)

Summer Semester 2023

Karlsruhe Institute for technology

Supervised Bachelor & Master Theses

Privacy Analysis of Deep Graph Generative Models using M.I.A.s
Master's Thesis

2023
Karlsruhe Institute for technology

INVITED TALKS AND PRESENTATIONS

"Unlocking the potential of composition in DP"

Invited talk in the COSIC Seminar

October 2023

KU Leuven

"Composability properties of DP"

Invited talk in the PROPOLIS project

July 2023

Karlsruhe Institute for technology

"Graph-based trajectory LDP masking"

Invited talk in the PROPOLIS project

July 2023

Karlsruhe Institute for technology

"Publishing Trajectories: A Study on Privacy Protection"

XVII Spanish Meeting on Cryptography and Information Security (RECSI22)

October 2022

University of Cantabria

"Mathematics behind privacy"

Invited talk in García Rodeja Seminar (CITMAGA)

June 2022

University of Santiago de Compostela

"Anonymizing Trajectory Data"

Invited talk in the PROPOLIS project

March 2022

SAP Labs France - Sophia Antipolis

"Anonymizing Trajectory Data: Limitations and Opportunities"

The Third AAAI Workshop on Privacy-Preserving Artificial Intelligence (PPAI-22)

February 2022

Online Event

"How sheaves theory can help air-controllers at an airport"

Invited talk in S.I.I. (Seminario de iniciación a la investigación)

March 2021

University of Santiago de Compostela

PUBLICATIONS

- [1] À. Miranda-Pascual, P. Guerra-Balboa, J. Parra-Arnau, J. Forné, and T. Strufe. "SoK: Differentially Private Publication of Trajectory Data". In: *Proceedings on Privacy Enhancing Technologies* 2023.2 (Apr. 2023), pp. 496–516. ISSN: 2299-0984. DOI: 10.56553/popets-2023-0065.
- [2] P. Guerra-Balboa, A. M. Pascual, J. Parra-Arnau, J. Forné, and T. Strufe. "Anonymizing Trajectory Data: Limitations and Opportunities". In: *The Third AAAI Workshop on Privacy-Preserving Artificial Intelligence (PPAI-22)* (2022). URL: <https://aaai-ppai22.github.io/files/25.pdf>.
- [3] P. Guerra-Balboa, A. M. Pascual, J. Parra-Arnau, J. Forné, and T. Strufe. "La Publicacion de Trayectorias: un Estudio sobre la Proteccion de la Privacidad". In: *XVII Reunión española sobre criptología y seguridad de la información. RECSI 2022* 265 (2022), p. 127. DOI: 10.22429/Euc2022.028.
- [4] P. Guerra-Balboa. "Cómo la teoría de haces puede ayudar en la torre de control de un aeropuerto". In: *Actas do seminario de iniciación a la investigación*. ISSN: 2171-6536. Seminario de Iniciación a la Investigación. Instituto de Matemáticas da Universidade de Santiago de Compostela, 2021, p. 51. URL: https://www.usc.gal/export9/sites/webinstitucional/gl/institutos/matematicas/descargas/Anuario_20_21_sii.pdf.

SPECIFIC FORMATION

Seminar in Scientific Communication

National Institute of Science Communication (NaWik)

2023

Karlsruhe, Germany

5th Interdisciplinary Summerschool on Privacy (ISP 2023)

Radboud University

2023

Berg en Dal, the Netherlands

Seminar in Schemes Theory (Algebraic Geometry)

University of Santiago de Compostela

2021

Santiago de Compostela, Spain

Discrete Morse Theory course	2019
R.E.T. In collaboration with U.S.C	Santiago de Compostela, Spain
Introduction to Ergodic Theory course	2019
R.E.T. In collaboration with U.S.C	Santiago de Compostela, Spain
Course on scientific documents and presentations on LaTeX	2019
University of Santiago de Compostela	Santiago de Compostela, Spain
Mechanical computer assisted design Campus	2014
Carlos III de Madrid University	Madrid, Spain

LANGUAGE

Spanish - Mother tongue

English: B2.1 with Honors

Trinity College London

German: B1.1

Karlsruher Institut für Technologie

Galician: CELGA4

OTHER ACTIVITIES AND INFORMATION

Foreign Exchange at Queen Mary's Grammar School Walsall, England

Programming: R, MATLAB, Fortran, Sagemath and Python

Volunteering: Guide at "Camiño ao respecto". Xunta de Galicia