Patricia Guerra Balboa

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Education

Master of Science in Mathematics   Sep. 2020 – July 2021
University of Santiago de Compostela   Santiago de Compostela, Spain

Bachelor's Degree in Mathematics   Sep. 2016 – July 2020
University of Santiago de Compostela   Santiago de Compostela, Spain

Work Experience

PhD Student Researcher   October 2021 – Nowadays
Chair of IT Security (PS), Karlsruhe Institute for technology   Karlsruhe, Germany
- Trajectory data privacy, theoretical aspects of data privacy and statistical disclosure control, Differential Privacy.

High-level research technician   July 2021 – September 2022
Universitat Politécnica de Catalunya   Barcelona, Spain
- Short-term research project about Generating Synthetic Data with Differential Privacy Guarantees.

High-level research technician   March 2021 – July 2021
University of Santiago de Compostela   Santiago de Compostela, Spain
- Studying and analysis of localization and cohomology on quasicoherent sheaves on schemes and associated spaces. Presentation about schemes package on Lean library

Intern   July 2019 – August 2019
Kidcode S.L.   Vigo, Spain
- Scientific divulgator and teacher

Honors and Awards

Best Poster Award Community Congress by Startup Secure   2023
K.I.T. Gründer Schmiede

"Mellores expedientes"(Best records) Recognition   2016
University of Santiago de Compostela

Teaching Experience

Teaching Assistance

Seminar Privacy und Technischer Datenschutz   Summer Semester 2022
Master's course in IT Security   Karlsruhe Institute for technology

Reading-Group Privacy Enhancing Technologies   Summer Semester 2022
Master's course in IT Security   Karlsruhe Institute for technology

Lecture on Trajectory Privacy   Summer Semester 2022
as part of the Lecture Series Privacy Enhancing Technologies (Master's course)   Karlsruhe Institute for technology

Seminar Privatsphäre und Sicherheit   Winter Semester 2022/23
Master's course in IT Security   Karlsruhe Institute for technology

Seminar Privacy und Technischer Datenschutz   Summer Semester 2023
Master's course in IT Security   Karlsruhe Institute for technology

Lectures on Differential Privacy   Summer Semester 2023
as part of the Lecture Series Privacy Enhancing Technologies (Master's course)   Karlsruhe Institute for technology

Supervised Bachelor & Mater Theses

Privacy Analysis of Deep Graph Generative Models using M.I.A.s   2023
Master's Thesis   Karlsruhe Institute for technology

INVITED TALKS AND PRESENTATIONS

"Unlocking the potential of composition in DP"   October 2023
Invited talk in the COSIC Seminar   KU Leuven

"Composposability properties of DP"   July 2023
Invited talk in the PROPOLIS project   Karlsruhe Institute for technology

"Graph-based trajectory LDP masking"   July 2023
Invited talk in the PROPOLIS project   Karlsruhe Institute for technology

"Publishing Trajectories: A Study on Privacy Protection"   October 2022
XVII Spanish Meeting on Cryptography and Information Security (RECSI22)   University of Cantabria

"Mathematics behind privacy"   June 2022
Inivited talk in García Rodeja Seminar (CITMAGA)   University of Santiago de Compostela

"Anonymizing Trajectory Data"   March 2022
Invited talk in the PROPOLIS project   SAP Labs France - Sophia Antipolis

"Anonymizing Trajectory Data: Limitations and Opportunities "   February 2022
The Third AAAI Workshop on Privacy-Preserving Artificial Intelligence (PPAI-22)   Online Event

"How sheaves theory can help air-controllers at an airport"   March 2021
Invited talk in S.I.I. (Seminario de iniciación a la investigación)   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   2023
 National Institute of Science Communication (NaWik)   Karlsruhe, Germany

5th lnterdisciplinary Summerschool on Privacy (ISP 2023)   2023
Radboud University   Berg en Dal, the Netherlands

Seminar in Schemes Theory (Algebraic Geometry)   2021
University of Santiago de Compostela   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