Bruno **Pereira**



Profile Summary

Since 2022, I have been working as a Research Assistant at INESC TEC, focusing primarily on the fields of security and operating systems. My research has increasingly centered on ransomware analysis and protection, driven by the growing impact of ransomware attacks on society and critical infrastructures. I am particularly motivated by the urgent need to develop more effective protection strategies to address this evolving threat.

Contact details

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Braga, Portugal

Personal information

Year of birth: **2001**

Languages: **Portuguese**, **English**

Skills

- Ransomware analysis and detection
- Operating Systems, Data Security, and Encryption
- Python, C, Haskell, C++, Java, Prolog, Erlang, SpringBoot
- Time management, Communication, and team collaboration

Education

BSc in Informatics Engineering

Oct 2019 - Jul 2022

University of Minho

My Bachelor's degree provided me with a strong foundation in core areas of computer systems, including operating systems, computer networks, and various programming paradigms such as functional, imperative, and object-oriented programming. It also introduced me to key concepts in artificial intelligence.

MSc in Informatics Engineering

Oct 2022 - Feb 2025

University of Minho

The main output of my Master's degree was my thesis entitled "Towards Optimized Development of Ransomware Detection Solutions", which was awarded a final grade of 18 out of 20. This work proposes a novel approach to developing ML-based detection solutions for ransomware. Further, it provides an in-depth analysis of the current landscape of detection methodologies, highlighting their benefits and limitations.

Doctoral Program on Informatics

Mar 2025 - Current

University of Minho

Experience

Research Assistant

2022 - Current

HASLab - INEC TEC

Research focused on understanding ransomware attacks and detection measures. During this time, I was able to characterize common and distinct ransomware behaviour by analysing I/O patterns and their behaviour in the operating system. Further, I studied ransomware detection tools, mainly those based on machine learning, categorizing their limitations and developing a methodology to optimize the development of new detection pipelines.

Pojeto Aliança para a Transição Energética

Jan 2024 - Current

HASLab - INESC TEC

My main contributions were centered on improving data security while in transit and at rest for machine learning pipelines. The work developed under this project enabled me to learn about data security and encryption mechanisms.

Publications

CRIBA: A Tool for Comprehensive Analysis of Cryptographic Ransomware's I/O Behavior

Feb 2024

Symposium on Reliable Distributed Systems

T. Esteves, B. Pereira, R. P. Oliveira, J. Marco and J. Paulo

Mentoring

Ransomware Behavioural Analysis Research

Oct 2024 - Current

MSc Student - Rui Lopes

Others

Visiting Scholar

May 2024 - Jul 2024

DistriNet - KU Leuven, Belgium

During the development of my master thesis I had the opportunity to collaborate with researchers Vera Rimmer and Lieven Desmet from the DistriNet Research Group at KU Leuven. This collaboration allowed me to explore the topic of machine learning explainability applied for ransomware detection solutions.