Luís Cruz – Curriculum Vitæ
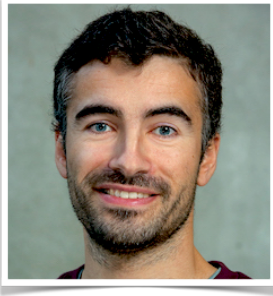
FULL NAME
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DATE OF BIRTH
January 15, 1989

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Research Interests

Software Engineering, Green AI, Green Software, AI Engineering, Energy Efficiency, Empirical Software Engineering, Software Design Patterns, Automatic Refactoring

Education

4TU.Education TU Delft | 2024

Pedagogical competences of the UTQ - University Teaching Qualification.

INESC-ID and University of Porto | 2013–2019

Ph.D. in Computer Science - MAP-i doctoral program

Title - *Tools and Techniques for Energy-Efficient Mobile Application Development*

Advisor - Prof. Rui Abreu | Honours: **cum laude**

Faculdade de Engenharia da Universidade do Porto (FEUP) | 2006–2011

Master in Informatics and Computing Engineering (MIEIC)

Final grade — 17/20 — **A** on the European Grading Scale

M.Sc. thesis - *Humanoid Robot Nao: Developing Behaviours for Soccer Humanoid Robots*. July, 2011

Escola Secundária de Barcelinhos (High School) | 2003–2006

Science course | Final Grade - 18.4/20

Working Experience

- **Master Coordinator of the CS MSc program at TU Delft, Data Science track, March 2021 – to date.**
- **Assistant Professor at TU Delft, November 2020 – to date.**
- **Scientific manager of AI for Fintech Research at ING, January 2020 – to date.**
- Postdoctoral Researcher at TU Delft, September 2019 – October 2020.
- Visiting Researcher at Monash University, 2018
- Junior Researcher at INESC ID, January 2017 – August 2019.
- Assistant Lecturer at IST/University of Lisbon of the unit course Software Engineering in 2017–2019.
- Research Assistant at Palo Alto Research Center (Xerox PARC) 2015.
- Assistant Lecturer at FEUP of the unit course Software Development Laboratory (LDSO) 2013–2015.
- Software architect and Web developer at Tecla Colorida, Lda., 2012–2013.
- Researcher of 'Escolinhas Criativas' project from University of Porto, September 2011 – March 2012.
- Researcher at AMADEUS project - *Aspects and Compiler Optimizations for Matlab System Development* in August-October 2009 and July – September 2010.
- Teaching Assistant at FEUP of the unit course Computer Graphics 2009/10.

Selected Journal Papers

- R. Verdecchia, J. Sallou, **L. Cruz** (2022). A Systematic Review of Green AI. WIREs Data Mining and Knowledge Discovery.

- M. Haakman, **L. Cruz**, H. Huijgens, A. van Deursen (2021). AI Lifecycle Models Need to be Revised. An Exploratory Study in Fintech. Empirical Software Engineering.

- S. Reis, R. Abreu, **L. Cruz** (2021). Fixing Vulnerabilities Potentially Hinders Maintainability. Empirical Software Engineering

- **Cruz, L.**, Abreu, R. (2019). On the Energy Footprint of Mobile Testing Frameworks. IEEE Transactions on Software Engineering

- **Cruz, L.**, Abreu, R., Lo, D. (2019). To the Attention of Mobile Software Developers: Guess What, Test your App!. Empirical Software Engineering.

- **Cruz, L.**, Abreu, R. (2019). Catalog of Energy Patterns for Mobile Applications. Empirical Software Engineering.

Selected Conference Papers

- P. Rani, J. Zellweger, V. Kousadianos, **L. Cruz**, T. Kehrer, A. Bacchelli (2024). Energy Patterns for Web: An Exploratory Study. ICSE SEIS.

- E. Kapel, **L. Cruz**, D. Spinellis, A. van Deursen (2024). On the Difficulty of Identifying Incident-Inducing Changes. ICSE SEIP 2024.

- T. Yarally, **L. Cruz**, D. Feitosa, J. Sallou, A. van Deursen (2023). Uncovering Energy-Efficient Practices in Deep Learning Training: Preliminary Steps Towards Green AI. CAIN'23. **Distinguished Paper Award**.

- H. Zhang, **L. Cruz**, and A. van Deursen (2022). Code Smells for Machine Learning Applications. CAIN'22

- B. van Oort, **L. Cruz**, B. Loni, A. van Deursen (2022). "Project smells" – Experiences in Analysing the Software Quality of ML Projects with mllint. ICSE 2022.

- **Cruz, L.**, Abreu, R., Grundy, J., Li, L., Xia, X. (2019). Do Energy-oriented Changes Hinder Maintainability?. The International Conference on Software Maintenance and Evolution (ICSME).

- **Cruz, L.**, Abreu, R. (2019). EMaaS: Energy Measurements as a Service for Mobile Applications!. IEEE/ACM 41st International Conference on Software Engineering: New Ideas and Emerging Technologies Results Track (ICSE-NIER)

- **Cruz, L.**, Abreu, R. (2018). Using Automatic Refactoring to Improve Energy Efficiency of Android Apps. In CIbSE XXI Ibero-American Conference on Software Engineering. **Best Paper Award**

- **Cruz, L.**, Abreu, R. (2017). Performance-based Guidelines for Energy-efficient Mobile Applications. In IEEE/ACM International Conference on Mobile Software Engineering and Systems, MOBILESoft.

- **Cruz, L.**, Abreu, R., Rouvignac J. (2017). Leafactor: Improving Energy Efficiency of Android Apps via Automatic Refactoring. In IEEE/ACM International Conference on Mobile Software Engineering and Systems, MOBILESoft.

Awards

- Best Paper Award (2023) – International Conference on AI Engineering (CAIN'23).

- Distinguished Reviewer Award (2023) – MSR'23.

- Most Influential Paper Award (2023) – MOBILESoft'23.

- Best Presentation Award (2019) – BENEVOL, The 18th Belgium-Netherlands Software Evolution Workshop.

- Best Paper Award (2018) – CIbSE XXI Ibero-American Conference on Software Engineering.

- Academic Excellence Award (2008) – University of Porto, with a grade of 17.9/20.

Teaching

- Sustainable Software Engineering (CS4415)
- REMLA: Release Engineering for Machine Learning Applications (CS4295)
- Literature Review (IN4306)
- MOOC. AI in Practice: Preparing for AI (edX)
- MOOC. AI in Practice: Applying AI (edX)

Scientific Committees & Other

- Organiser of the CECAM-Lorentz Center seminar on "Greening AI with SE". Feb 2025.
- Program Chair at CAIN 2024
- Thematic Track Chair at QUATIC 2024
- Served as PC member at MSR, MOBILESoft, SEAA, EASEAI, ISEC, ICSME, CAIN.
- Served in the organising committee of ESEC/FSE, ICSE, MOBILESoft, ICST, MSR,
- Artefact Evaluation Committee of ESEC/FSE 2020
- Served as reviewer for EMSE, TSE, JSS, AUSE, TOSEM

Media Appearances

April 2024. *Luís Cruz: "A IA não terá emoções. Pelo menos como as conhecemos"*. Notícias Magazine. Link. (In Portuguese.)

April 2024. *Custo ambiental. "Por cada 30 interações com o ChatGPT, meio litro de água evapora-se"*. Diário de Notícias. Link. (In Portuguese.)

April 2024. *"Factura de electricidade para treinar e usar sistemas de IA é uma brutalidade"*. Público. Link. (In Portuguese.)

June 2023. Nieuwsuur (News program from a Dutch national TV channel). Link.

May 2023. TU Delft Stories. Link.

July 2022. Podcast EnvironmentalVariables, episode 8. Link, Spotify.

March 2021. SDTimes. Link.

June 2019. Diário de Notícias. Link.