Marco **Couto**

PhD - COMPUTER SCIENCE · · MSc - SOFTWARE ENGINEERING

Rua do Corujo nº 668, Vila Boa - Barcelos, Portugal

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Current Situation: *Full Stack Developer @ Mayn Protec*

Education

Universidade do Minho
GRADUATED IN SOFTWARE ENGINEERING

Braga - Portugal
2008 - 2012

- *Overall Classification – 13*

Universidade do Minho
MASTERS IN SOFTWARE ENGINEERING

Braga - Portugal
2012 - 2014

- *Overall Classification – 17*
- *Thesis: "Monitoring Energy Consumption in Android applications" – 18*

MAP-i Doctoral Program
PhD IN COMPUTER SCIENCE

Minho, Aveiro and Porto - Portugal
2014 - 2020

- *Thesis: Supporting Software Developers in Making Energy Saving Decisions.*

Tech Skills

LANGUAGES

Python, JavaScript, Haskell, C, HTML, CSS, LaTeX
EXPERT

PHP, C#, Bash
INTERMEDIATE

Rust
BEGINNER

FRAMEWORKS

Django, Vue, Nuxt, Bootstrap, Tailwind
EXPERT

React, Next, Android
INTERMEDIATE

Laravel, Electron
BEGINNER

TOOLS & TECHS

Unix, Git, MySQL, Visual Studio
EXPERT

Ansible, Vagrant, Trello, Asana, Photoshop
INTERMEDIATE

Docker, PostgreSQL, Google Analytics
BEGINNER

Soft Skills

Writing
FORMAL AND INFORMAL DOCUMENTS

Talking
PUBLIC PRESENTATIONS

About Me
DETAIL ORIENTED,
LOVE CHALLENGES,
SYSTEM THINKER

Languages

Portuguese
NATIVE

English
C1 LEVEL
Fluent

Spanish
B2 LEVEL
Intermediate Speaking

French
A2 LEVEL
Basic Unerstanding

Experience

DEVELOPER

Mayn Protec
FULL STACK DEVELOPER
- *Web development*
- *CI/CD management*
- *Infrastructure management*

Braga - Portugal
Dec. 2020 - Currently

TEACHING

Universidade do Minho
MONITOR - FORMAL METHODS IN SOFTWARE ENGINEERING (MASTER IN SOFTWARE ENGINEERING)
- *Course: Análise e Teste de Software*

Braga - Portugal
Sep. 2015 - Feb. 2016

RESEARCHING

Researcher at HASLab
HASLAB/INESC TEC - UNIVERSIDADE DO MINHO
- *Topic: Energy Analysis in Software*

Braga - Portugal
May 2014 - Present

SUPERVISING

Co-supervisor of Master's thesis
STUDENT: RUI ANTÓNIO RAMADA RUA
- *Title: "GreenSource - Repository tailored for Green Software Analysis"*
- *Mestrado Integrado em Engenharia Informática - Universidade do Minho*

Braga - Portugal
Oct 2017 - Sep 2018

Co-supervisor of Master's thesis
STUDENT: ADRIANO BERNARDO DE TAVEIRA E CUNHA PINTO
- *Title: "Memoization para Poupar Energia em Aplicações Android"*
- *Mestrado em Engenharia Informática - Universidade NOVA de Lisboa*

Braga - Portugal
Jan 2017 - Jun 2018

Co-supervisor of Master's final project
STUDENT: SANDRA ISABEL LOPES FERREIRA
- *Title: "Eficiência Energética de Linguagens de Programação"*
- *Mestrado em Engenharia Informática - Universidade do Minho*

Braga - Portugal
Mar 2016 - Jul 2016

Co-supervisor of Bachelor's final project
STUDENTS: JOSÉ PEDRO BRANDÃO E MIGUEL ÂNGELO OLIVEIRA
- *Title: "Monitorização de Consumo de Energia em Software"*
- *Licenciatura em Ciências da Computação - Universidade do Minho*

Braga - Portugal
Feb. 2015 - Jul. 2015

Projects

GreenSSCM: Green Software for Space Control Missions
RESEARCHER/GRANT HOLDER
- QREN Project, ref. 2014/038973

Braga - Portugal
May 2014 - May 2016

Software Repositories for Green Computing
PROJECT MEMBER
- FLAD/NSF Project, ref. 300/2015
- 2 months visit to University of California, Irvine

Irvine, CA - USA
Jan 2016 - Dec 2017

Software Verde como uma Disciplina de Engenharia de Software
PROJECT MEMBER
- FCT Bilateral Project (Portugal - Slovakia), ref. Procº 441.00

Braga - Portugal
Fev 2016 - Jan 2018

Green Software Lab: Towards an Engineering Discipline for Green Software
PROJECT MEMBER
- FCT Project, ref. PTDC/EEI-ESS/5341/2014

Braga - Portugal
Jan 2016 - Dec 2019

Quantitative Program Analysis

Braga - Portugal

Project Member

Jan 2017 - Dec 2018

- FLAD/NSF Project, ref. 275/2016

Publications

Books

Supporting Software Developers in Making Energy Saving Decisions

MSc Thesis

Marco Couto

Dec. 2020

Monitoring Energy Consumption in Android Applications

PhD Thesis

Marco Couto

Sep. 2014

Journals

SPELLing Out Energy Leaks: Aiding Developers Locate Energy Inefficient Code

JSS

Rui Pereira, Tiago Carção, **Marco Couto**, Jácome Cunha, João Paulo Fernandes, João Saraiva

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- Submitted to Journal of Systems and Software (34 pages long)

Conference Papers

Energy Refactorings for Android in the Large and in the Wild

SANER '20

Marco Couto, João Saraiva, João Paulo Fernandes

Feb. 2020

- In Proc. of 27th 27th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER) (pp. -)
- **21%** acceptance rate

GreenHub Farmer: Real-world data for Android Energy Mining

MSR '19

Hugo Matalonga, Bruno Cabral, Fernando Castor, **Marco Couto**, Rui Pereira, Simão Melo de Sousa,

May. 2019

João Paulo Fernandes

- In Proc. of 16th International Conference on Mining Software Repositories (MSR) (pp. 171-175)

GreenSource: a large-scale collection of Android code, tests and energy metrics

MSR '19

Rui Rua, **Marco Couto**, João Saraiva

May. 2019

- In Proc. of 16th International Conference on Mining Software Repositories (MSR) (pp. 176-180)

Towards using Memoization for Saving Energy in Android

CIbSE '19

Rui Rua, **Marco Couto**, Adriano Pinto, Jácome Cunha, João Saraiva

Apr. 2019

- In Proc. of 22nd Iberoamerican Conference on Software Engineering (CIbSE) (pp. 279-292)
- **30%** acceptance rate

Energy efficiency across programming languages: how do energy, time, and memory relate?

SLE '17

Rui Pereira, **Marco Couto**, Francisco Ribeiro, Rui Rua, Jácome Cunha, João Paulo Fernandes, João

Sep. 2017

Saraiva

- In Proc. of 10th ACM SIGPLAN International Conference on Software Language Engineering (SLE) (pp. 256-267)

Towards a Green Ranking for Programming Languages [*Best Paper]

SBLP '17

Marco Couto, Rui Pereira, Francisco Ribeiro, Rui Rua, João Saraiva

Sep. 2017

- In Proc. of the 21st Brazilian Symposium on Programming Languages (SBLP) (pp. 7:1-7:8)

Products go Green: Worst-Case Energy Consumption in Software Product Lines

SPLC '17

Marco Couto, Rui Pereira, Paulo Borba, Jácome Cunha, João Paulo Fernandes, João Saraiva

Oct. 2017

- In Proc. of 21st International Systems and Software Product Line Conference (SPLC) (pp. 84-93)
- **30%** acceptance rate

Helping programmers improve the energy efficiency of source code [Poster]

ICSE-C '17

Rui Pereira, Tiago Carção, **Marco Couto**, Jácome Cunha, João Paulo Fernandes, João Saraiva

May. 2017

- In Proc. of 39th International Conference on Software Engineering Companion (ICSE-C) (pp. 238-240)
- **27%** acceptance rate (invited poster)

The Influence of the Java Collection Framework on Overall Energy Consumption

GREENS '16

Rui Pereira, **Marco Couto**, João Saraiva, Jácome Cunha, João Paulo Fernandes

May 2016

- In Proc. of 5th International Workshop on Green and Sustainable Software, GREENS '16 (pp. 15-21)

GreenDroid: A Tool for Analysing Power Consumption in the Android Ecosystem

Informatics '15

Marco Couto, Jácome Cunha, João Paulo Fernandes, Rui Pereira, João Saraiva

Nov. 2015

- In Proc. of IEEE International Scientific Conference on Informatics 2015 (pp. 73-78)

Automatic Distinction of Fernando Pessoas' Heteronyms

EPIA '15

João F. Teixeira, **Marco Couto**

Apr. 2015

- In Proc. of 17th Portuguese Conference on Artificial Intelligence - EPIA (pp 783-788)

Detecting Anomalous Energy Consumption in Android Applications

SBLP '14

Marco Couto, Tiago Carção, Jácome Cunha, João Paulo Fernandes, João Saraiva

Sep. 2014

- In Proc. of 18th Brazilian Symposium on Programming Languages - SBLP (pp. 77-91)

Community Service

CONFERENCES

2020 **Article presentation**, "*Energy Refactorings for Android in the Large and in the Wild*"

London, ON, Canada

2017 **Article presentation**, "*Products go Green: Worst-Case Energy Consumption in Software Product Lines*"

Seville, Spain

INVITED TALKS

2017 **35th InfoBlender**, "*Static Energy Prediction in Software*" [link]

Braga, Portugal

THESIS REVISION

2016 **Jury Member**, BSc Thesis. "*Green Software Development for the Android Platform*" - Dávid Novák

Kosice, Slovakia

PAPER REVISION

2019 **SBES '19**, 2019 33rd Brazilian Symposium on Software Engineering (Subreviewer) .

2018 **VL/HCC '18**, 2018 IEEE Symposium on Visual Languages and Human-Centric Computing (Subreviewer) .

2018 **QRS '18**, IEEE 18th International Conference on Software Quality, Reliability, and Security (Subreviewer) .

2018 **RSC**, *[Journal]* Revista de Sistemas e Computação (Subreviewer) .

2017 **SBLP '17**, 21st Brazilian Symposium on Programming Languages (Subreviewer) .