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Pedro M. Silva

COVER

My values as a Software Engineer are: to develop solutions fitting the right technology to the right problem; test to validate and document the necessary functionality; and use the right complexity level for the problem being addressed. Technology should empower us to deliver value efficiently, not sacrifice it for the sake of novelty. Testing is the only way of knowing software does what it is supposed to do, aside from running it in production. As such, tests should document the use cases, at the same time they validate the solutions work. As for unnecessary complexity, experience has taught me that a solution should be as simple as possible and as complex as necessary.

During my career I've had the chance to play many roles. In academia I had to find solutions for undefined problems by coming up with hypotheses and validating them. As an engineer, I've dealt with legacy systems and monoliths that had to be kept afloat, but also worked on green field projects. And as a technical leader I had the chance to directly impact the technical progress of the team and system being built. At the moment I am searching for new opportunities to create solutions that deliver value, and to learn new tthings.

SKILLS

Technologies:

- Python, Flask, SQL, C++, C;
- GCP (AppEngine, StackDrive, CloudRun, Firebase, Cloud Storage, KMS, Functions);
- AWS (EC2, ECS, S3, Lambda, cloudformation) and Docker;
- Ansible, Shell Scripting, git, GitLab, Jenkins, Make and CMake and Unix Command line;
- JSON, XML, Javascript, Pandas, Numpy, Pyramid.

Related skills:

- Strong knowledge of data structures and algorithms;
- Experience with Imperative, Object Oriented and Functional Programming;
- Concern with maintainability by keeping the code clean and healthy, as well as the system;
- Unit tests, integration tests and functional tests, Tests!;
- ETL, data cleaning and analysis, and machine learning;
- Technical leadership, recruitment and mentoring;
- Troubleshoot hard issues and design appropriate solutions;
- Design and implementation of greenfield solutions and improvement of existing ones;
- **Capable and eager learner**.

EXPERIENCE

Senior Software Engineer and Team Lead From September 2018
2Sixty Technologies, London, United Kingdom.

- Main technologies and Practices:
  - Python, Flask, JSON, gitlab (CICD and version control);
  - GCP (AppEngine, StackDrive, CloudRun, Firebase, Cloud Storage, KMS, Functions);
  - Microservices, Rest APIs, Layered Service design, Hexagonal Architecture;
- Design and implementation of REST APIs using Microservices;
- Created toolbox and templates to normalise structure and best practices;
- Troubleshooting issues and implementing patches and solutions;
- Robust integration with different products and third parties;
- Promoted to Team Lead;
- Set high standards for code and tests (mostly integration and E2E) for maintainability;
- Gathering requirements, define roadmap and priorities with Product;
- Allocated and overviewed work from different team members, while making my own contributions;
- Responsible for technical hiring and mentoring of new team members;
- Researched complex business logic to extract data for optimisation problems;

Software Engineer and Lead Developer From May 2015 to September 2018
Essentia Analytics, London, United Kingdom.

- Main technologies and Practices:
  - Python, JavaScript, CSS, PostgreSQL, JSON;
  - AWS (ECS, EC2, S3, Cloudformation, Lambda), Docker;
  - Bash scripting, Python and Ansible, GIT, Jenkins and Github;
  - Agile, pair programming, TDD, functional programming;
- Continuous development and integration of back and front ends;
- Maintenance of monolith application and its infrastructure;
- Created tools to automate processes;
- Clean code (and clean the code) mindset - technical debt and tests;
- From Junior to Lead Developer;
- Technical screening, training and mentoring of new team members;
- Prioritising maintenance and development tasks across teams;
- Architecture and structure changes for new features and reduce technical debt;

Software Engineer From November 2013 to April 2015
Critical Manufacturing, Maia, Portugal.

- Main technologies and Practices:
  - C++, C, make, cmake, bash scripting, Perl;
  - Java, PL/SQL, C#, XML;
  - Legacy CVS, Agile with SCRUM;
- Full software life cycle from requirements gathering, implementation, testing, production deployment and maintenance;
- Created test specification for test batteries (unit, integration, system and regression tests);
- Interpret client requests and implement new features and in existing applications;
- Troubleshooting existing legacy application and define appropriate patches and solutions;

- Responsible for the version control at different stages of development and validation of software solutions (CVS);

Researcher September 2010 to October 2013
Industrial Electronics Department, University of Minho, Portugal.

- Application of machine learning (Genetic Algorithms and Genetic Programming, reinforcement learning and linear regression) and Information Theory in the generation of adaptive legged locomotion;
- Creation and improvement of software controllers and tools to generate and analyse data using C++, Python and Matlab;
- Produced scientific papers (references bellow).

Researcher During 2008
Informatics Department, University of Minho, Portugal.

- Development of C and Java libraries for the Interval Tree Clocks, a system to track the causality on dynamic distributed systems;
- Implemented based on a scientific paper and Scala library;
- Defining requirements, structure and interface for the libraries;
- Testing, and proving correctness of libraries.

EDUCATION

Master on Informatics Engineering,
University of Minho, Braga, Portugal, October 2011
Focus: Intelligent Systems and Computer Graphics. Master's thesis about Machine Learning concepts applied to robotic legged locomotion, aiming to achieve adaptive locomotion.

Bachelor of Informatics Engineering,
University of Minho, Braga, Portugal, September 2009
Focus: Informatics Engineering disciplines. Algorithms and Complexity, Computer Graphics, Intelligent Systems and Computer Networks.

ADDITIONAL INFORMATION

Languages

- Portuguese : native;
- English : fluent;
- French : beginner;
- Spanish : beginner;

Most Relevant Publications

Pedro Silva, Vitor Matos, and Cristina P Santos. Visually guided gait modifications for stepping over an obstacle: a bio-inspired approach. *Biological cybernetics*, 108(1):103–119, 2014.

Pedro Silva, Cristina P Santos, Vítor Matos, and Lino Costa. Automatic generation of biped locomotion controllers using genetic programming. *Robotics and Autonomous Systems*, 62(10):1531–1548, 2014.

Pedro Silva, Cristina P Santos, and Daniel Polani. Optimization of stable quadruped locomotion using mutual information. In *11TH International Conference of Numerical Analysis and Applied Mathematics 2013: ICNAAM 2013*, volume 1558, pages 1021–1024. AIP Publishing, 2013.