Universidade do Minho
Escola de Engenharia

Nome Estudante	Paulo Jorge Pereira Martins
Título da Dissertação (em Português)	Desenvolvimento de uma rede social de e-portfolios através de tecnologias emergentes
Título da Dissertação (em Inglês)	Development of an e-portfolio social network using emerging technologies

Enquadramento e Motivação (150 - 200 palavras)

Digital portfolios (also known as e-Portfolios) can be described as digital collections of artifacts, being both a product (a digital collection of artifacts) and a process (reflecting on those artifacts and what they represent). It is an extension of the traditional Curriculum Vitae, where the first tells the educational and professional milestones of someone, the later, the Portfolio, proves and qualifies them (e.g.: annually thousands of students finish a Master degree on Informatics, but only one has built Vue, Twitter or Facebook – the Portfolio goes beyond the CV milestones by specifying the person's output throughout life and distinguishing them). This approach can be useful for companies seeking talented individuals, because it expands the CV concept. There are some services for Digital Portfolios creation, but the majority are static - this project aims to explore the potential of social networks to promote them.

The approach to the development of this platform will be to integrate emerging technologies like Web Assemble and Rust in its development cycle. At the end of this project, besides the platform output, we will be able to answer questions regarding Web Assembly and Rust state of the art and their contribution to the present web development ecosystem.

Objetivos e Resultados Esperados (150 - 200 palavras)

This project aims to create a social network of e-Portfolios. In the end we will have built a web platform for interacting with social graphs of users, their skills and companies seeking them.

This project will focus and integrate emerging technologies, namely Rust and Web Assembly, analyzing their contribution to the contemporary Web Development. Both were developed by Mozilla in recent years, being in a stage of early adoption, but growing very fast (e.g. Rust was the most trending language in the TIOBE index in 2020; NPM was rewrote using it; Deno, the successor to NodeJs, and Firefox are being coded with Rust; Microsoft is rewriting some Windows components using it; won the StackOverflow Survey "Most Loved Language of the Year" for 4 years in a row; etc.). Even though in early stages, it's ecosystem of libraries for web development is promising. In the other hand, Web assembly is a low level, assembly like language that can be run on browsers (Rust was an early supporter). Theoretically it could improve web development and impact the future of cross-platform, but lacks real world examples yet. This project aims to integrate these emerging technologies and analyze their potential contribute to web development.

Calendarização

	Time (Months: October - June)								
	10	11	12	01	02	03	04	05	06
Phase I	X	x	x	x	x	x	x	x	x
Phase II	x								
Phase III	x	x	x						
Phase IV		x							
Phase V		x	x	x	x	x	x	x	
Phase VI				x					
Phase VII				x	x	x	x	x	
Phase VIII								x	x
Phase IX									x

Phase I
Bibliography acquisition, research and reading on the main and related areas.

Phase II
Problem identification and definition. Planning – first draft.

Phase III

State of the Art: study and definition. Description and critical discussion of related scientific work. Study and definition of the results and approaches that already have been presented in this or related areas.

Phase IV
Modeling and planning of the software: requirements specification, system design, architectural decisions.

Phase V
Start of the main development cycle, software implementation.

Phase VI
Preliminary thesis structure and table of contents roadmap. First chapters draft delivery (introduction and State of the Art analysis consolidation).

Phase VII
Thesis development, chapters writing, report of the development cycle and consolidation of ideas.

Phase VIII
Software debugging and testing.

Phase IX
Review of the final thesis. Consolidation and delivery of the final document.

Referências Bibliográficas (5 - 10 referências)

Preliminary bibliography:

1. Abhiram Balasubramanian, Marek S. Baranowski, Anton Burtsev, Aurojit Panda, Zvonimir Rakamarić, and Leonid Ryzhyk. 2017. System Programming in Rust: Beyond Safety. In Proceedings of the 16th Workshop on Hot Topics in Operating Systems (HotOS '17). Association for Computing Machinery, New York, NY, USA, 156–161. DOI:https://doi.org/10.1145/3102980.3103006
2. Basken, P. 2008. Electronic portfolios may answer calls for more accountability. Chronicle of Higher Education, 54(32): A30–A31.
3. Cordie, L., Sailors, J., Barlow, B. and Kush J. S. 2019. Constructing a Professional Identity: Connecting College and Career Through ePortfolios. International Journal of ePortfolio, 9(1). URL: https://files.eric.ed.gov/fulltext/EJ1214594.pdf
4. Gallant, G. 2019. WebAssembly in Action. Manning Publications.
5. Hoffman, K. 2019. Programming WebAssembly with Rust: Unified Development for Web, Mobile, and Embedded Applications. The Pragmatic Programmers, LLC.
6. Jim Blandy. 2015. The Rust Programming Language: Fast, Safe, and Beautiful. O'Reilly Media, Inc.
7. Lonkar A. and Chandrayan, S. 2018. The dark side of WebAssembly. Virus Bulletin.
8. Lyu S. (2020) What Else Can You Do with Rust?. In: Practical Rust Projects. Apress, Berkeley, CA. https://doi.org/10.1007/978-1-4842-5599-5_7
9. Rossberg, A. et al. 2018. Bringing the web up to speed with WebAssembly. Communications of the ACM. 61. 107-115. 10.1145/3282510.
10. Zheng, G. et al. 2020. WebAssembly(WASM). 10.1007/978-981-15-6218-1_11.

Assinaturas

Estudante

Orientador

Diretor do Ciclo de Estudos

Coorientador (se aplicável)

Assinatura digital qualificada com Cartão de Cidadão ou Chave Móvel Digital. Para os estudantes, nos casos em que tal não seja possível, os mesmos deverão imprimir este plano, assinar manualmente e, após digitalização, os restantes intervenientes usam a assinatura digital qualificada.

O plano de trabalho deve ser preenchido *offline* e realizado o *upload* do mesmo, depois de assinado, no formulário do requerimento de pedido de admissão à dissertação, disponível em http://dissertacao.eng.uminho.pt