André Pascoal Bento

PhD Student @ CISUC | Assistant Professor @ University of Coimbra

andre.pascoal.bento@gmail.com (+351) 910 349 466 **Address:** Coimbra, Portugal.
andre-bento CISUC Profile Scholar andrepbento
Communication skills: Portuguese (native), English (advanced), French (intermediate), Spanish (intermediate).

About André Bento is a researcher at the Centre for Informatics and Systems at the University of Coimbra, where he is also pursuing a Ph.D. in Informatics Engineering and teaching as an invited professor. His research focuses on optimizing availability and resource utilization of cloud services. He holds a B.Sc. from the Coimbra Institute of Engineering and a M.Sc. from the University of Coimbra. Passionate about distributed systems, he constantly seeks new learning opportunities. Beyond work, he enjoys swimming, cycling, exploring nature and playing the guitar.

Experience

Sep 2021 - Present, *Invited Professor*, University of Coimbra
Teaching practical laboratory classes on Distributed Systems (B.Sc.) and Systems Integration (M.Sc.) in Informatics Engineering. Topics in Distributed Systems include multi-threading, parallel programming, RMI/RPC, REST services (Spring Boot and FastAPI), and WebSockets. Systems Integration topics cover microservices, service-oriented architectures, integration patterns, data serialization formats (XML, JSON, and Protocol Buffers), Reactive REST APIs and event-driven systems (Apache Kafka).

Sep 2019 - Present, *Researcher*, CISUC - Centre for Informatics and Systems of the University of Coimbra
Researching optimization techniques and root-cause analysis to improve availability and resource utilization of cloud services. Developing solutions using Docker, Kubernetes, Helm, Terraform, Ansible, CI/CD and AWS, alongside service mesh (Istio), observability tools (Grafana, Prometheus, and Jaeger) and data analysis using Pandas, NumPy, and SciPy. Utilizing Python, Java, and Go as programming languages and Git as a version control system.

Sep 2018 - Jul 2019, *Research Intern*, CISUC - Centre for Informatics and Systems of the University of Coimbra
Researched microservices, observability and performance monitoring using metrics, logs, and distributed tracing.

Feb 2017 - Jul 2017, *Software Engineer Intern*, WIT Software, S.A.
Developed a Mobile Augmented Reality prototype for Android and iOS, implementing digital filters, image manipulation, and user content creation features (*e.g.*, selfies, stickers, photo effects, sound effects, emojis, and drawings).

Oct 2016 - Jun 2017, *Scratch Teacher Assistant*, CASPAE 10
Taught problem-solving using Scratch programming to primary school children in 3rd and 4th grades.

Nov 2015 - Mar 2016, *Math Applied to Engineer Teacher – Volunteer*, CeAMatE
Taught mathematics to pre-degree and engineering students.

May 2014 - Jul 2014 and May 2013 - Jun 2013, *Accountant Technician Intern*, Caixa de Crédito Agrícola Mútuo de Mira - C.R.L.
Assisted with bank accounting, organization, and daily operations.

Education

2019 - 2025 (Expected), Ph.D. in Informatics Engineering, University of Coimbra
Thesis: Optimizing Availability and Resource Utilization of Cloud Services.

2017 - 2019, M.Sc. in Informatics Engineering, University of Coimbra
Thesis: Observing and Controlling Performance in Microservices.

2014 - 2017, B.Sc. in Informatics Engineering, Coimbra Institute of Engineering (ISEC)

Grants and Projects

- **Dec 2021 - Jul 2025, Ph.D. grant** - Foundation for Science and Technology (FCT) grant number BD.06012.2021.
- **2023 - 2025, ROAR-NET** - Randomised Optimisation Algorithms Research Network (CA22137). Funded by COST.
- **2019 - 2022, AESOP** - Autonomic Service Operation. Funded by P2020-31/SI/2017, No. 040004.

Publications

1. **Andre Bento**, Filipe Araujo, Luís Paquete, and Raul Barbosa. *Optimal Scaling of Cloud Services*. Submitted to an International Journal.
2. **Andre Bento**, Filipe Araujo, and Raul Barbosa. *Cost-availability aware scaling: Towards optimal scaling of cloud services*. Journal of Grid Computing, 21(4):80, 2023.
3. Gonçalo Baptista, Jaime Correia, **Andre Bento**, Joao Soares, Antonio Ferreira, Joao Duraes, Raul Barbosa, and Filipe Araujo. *Defektor: An extensible tool for fault injection campaign management in microservice systems*. In Proceedings of the 38th ACM/SIGAPP Symposium on Applied Computing, SAC'23, page 184-187, New York, NY, USA, 2023.
4. Stanley Lima, Filipe Araujo, Miguel de Oliveira Guerreiro, Jaime Correia, **Andre Bento**, and Raul Barbosa. *Efficient causal access in geo-replicated storage systems*. Journal of Grid Computing, 21(1):8, 2023.
5. **Andre Bento**, Joao Soares, António Ferreira, Joao Duraes, José Ferreira, Rita Carreira, Filipe Araujo, and Raul Barbosa. *Bi-objective optimization of availability and cost for cloud services*. In 2022 IEEE 21st International Symposium on Network Computing and Applications (NCA), volume 21, pages 45-53. IEEE, 2022.
6. **Andre Bento**, Jaime Correia, Joao Duraes, João Soares, Luís Ribeiro, António Ferreira, Rita Carreira, Filipe Araujo, and Raul Barbosa. *A layered framework for root cause diagnosis of microservices*. In 2021 IEEE 20th International Symposium on Network Computing and Applications (NCA), pages 1-8. IEEE, 2021.
7. João Tomás, **Andre Bento**, João Soares, Luís Ribeiro, António Ferreira, Rita Carreira, Filipe Araújo, and Raul Barbosa. *Autonomic service operation for cloud applications: Safe actuation and risk management*. In Dependable Computing-EDCC 2021 Workshops: DREAMS, DSOGRI, SERENE 2021, Munich, Germany, September 13, 2021, Proceedings 17, pages 39-46. Springer, 2021.
8. Sara Silva, Jaime Correia, **Andre Bento**, Filipe Araujo, and Raul Barbosa. *µViz: Visualization of microservices*. In 2021 25th International Conference Information Visualisation (IV), pages 120-128. IEEE, 2021.
9. **Andre Bento**, Jaime Correia, Ricardo Filipe, Filipe Araujo, and Jorge Cardoso. *Automated analysis of distributed tracing: Challenges and research directions*. Journal of Grid Computing, 19:1-15, 2021.