



Eoin Martino Grua

Curriculum Vitae

Personal Information

Date of birth **August 30th, 1993.**
Place of birth **Cork, Co. Cork, Ireland.**
Nationalities **Irish, Italian.**

Languages

Italian Native Speaker
English Native Speaker
Spanish B1.1
Dutch A1

Research Interests

Machine Learning
Personalisation
Clustering
Reinforcement Learning
Data-driven Software Engineering
Software Self-adaptation
E-Health

Current Position

March 2021 - **Research Assistant**, *Dept. of Electronic and Computer Engineering*, University of Limerick (UL), Limerick, Rep. of Ireland, Under the supervision of Dr. Pepijn Van De Ven.

Education

- Jan 2017–
February 2021 **PhD Candidate**, *Vrije Universiteit Amsterdam, The Netherlands*, “The Future of E-Health is Mobile: Combining AI and Self-adaptation to create adaptive e-Health mobile applications”, Research areas: Machine Learning, Clustering, Reinforcement Learning, Software Engineering, Software Self-Adaptation, Mobile Apps, e-Health. Other roles: Cooperated with Sense-health (sense-health.com) on research for personalisation of e-Health apps.
- July 2017 **ICT4S**, *attended the 2017 summer school on Information and Communications Technologies for Sustainability*, Lorentz Center, Leiden (The Netherlands).
- June 2017 **iSAPS**, *attended the 2017 International Software Architecture PhD School*, Lorentz Center, Leiden (The Netherlands).
- 2015–2016 **Master Degree in Computer Science**, *Swansea University*, Swansea (Wales), Thesis: “Sampler of Ancient Egyptian Supernatural Beings”.
Graduated with Distinction
- 2012–2015 **Liberal Arts and Science honours degree in Science with a minor in Psychology**, *Amsterdam University College*, Amsterdam (The Netherlands), Thesis: “Analysis of computational cost and satisfiability of permutohedra derived by an instance of 3SAT”.
- 2007–2012 **Maturità geometra (high school degree)**, *Istituto Tecnico Geometra “IISP Vitone”*, Chieri (Italy), *89/100*.

Other work experience

- 2014–2015 Committee Affairs Officer in the Amsterdam University College Student Association (AUCSA). Main responsibilities: communication between the AUCSA and the member committees, organisation management, and budget management.
- 2014–2015 Internship at Amsterdam University College as a website developer (<http://am.auc-computing.nl/>). Main responsibilities: developing the back-end for an assignment manager website.
- 2014 Internship at the Computational Science section in the faculty of science of the Universiteit van Amsterdam (UvA). Main responsibilities: implemented an algorithm to create, modify, and graph a Barabasi Albert dynamic network.
- 2011 Internship at the Studio Geometra Conteri Orazio. Main responsibilities: drawing up floor plans in AutoCAD.

Associations

- from 2019 **ACM**, *Member of the Association for Computer Machinery*.

Publications

- [1] I. Malavolta, E. M. Grua, C.-Y. Lam, R. de Vries, F. Tan, E. Zielinski, M. Peters, and L. Kaandorp. A framework for the automatic execution of measurement-based experiments on android devices. In *Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering Workshops*, ASE '20, page 61–66, New York, NY, USA, 2020. Association for Computing Machinery.

- [2] E. M. Grua, M. De Sanctis, and P. Lago. A reference architecture for personalized and self-adaptive e-health apps. In *Software Architecture: 14th European Conference, ECSA 2020 Tracks and Workshops, L'Aquila, Italy, September 14–18, 2020, Proceedings*, pages 195–209. Springer, 2020.
- [3] F. den Hengst, E. M. Grua, A. el Hassouni, and M. Hoogendoorn. Reinforcement learning for personalization: A systematic literature review. *Data Science*, 3(2):107–147, 2020.
- [4] K. Chan-Jong-Chu, T. Islam, M. M. Exposito, S. Sheombar, C. Valladares, O. Philippot, E. M. Grua, and I. Malavolta. Investigating the correlation between performance scores and energy consumption of mobile web apps. In *Proceedings of the Evaluation and Assessment in Software Engineering*, pages 190–199. 2020.
- [5] K. Chan Jong Chu, T. Islam, M. M. Exposito, S. Sheombar, C. Valladares, O. Philippot, E. M. Grua, and I. Malavolta. Investigating the correlation between performance scores and energy consumption of mobile web apps. (Preprint), 2020.
- [6] E. M. Grua, I. Malavolta, and P. Lago. Self-adaptation in mobile apps: A systematic literature study. In *2019 IEEE/ACM 14th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)*, pages 51–62. IEEE, 2019.
- [7] E. M. Grua, M. Hoogendoorn, I. Malavolta, P. Lago, and A. Eiben. Clustream-GTk: Online clustering for personalization in the health domain. In *IEEE/WIC/ACM International Conference on Web Intelligence*, pages 270–275. ACM, 2019.
- [8] E. Barbaro, E. M. Grua, I. Malavolta, M. Stercevic, E. Weusthof, and J. van den Hoven. Modelling and predicting user engagement in mobile applications. *Data Science*, (Preprint):1–17, 2019.
- [9] A. F. Schneider, S. Matinfar, E. M. Grua, D. Casado-Mansilla, and L. Cordewener. Towards a sustainable business model for smartphones: Combining product-service systems with modularity. In B. Penzenstadler, S. Easterbrook, C. Venters, and S. I. Ahmed, editors, *ICT4S2018. 5th International Conference on Information and Communication Technology for Sustainability*, volume 52 of *EPiC Series in Computing*, pages 82–99, 2018.
- [10] E. M. Grua and M. Hoogendoorn. Exploring clustering techniques for effective reinforcement learning based personalization for health and wellbeing. In *2018 IEEE Symposium Series on Computational Intelligence (SSCI)*, pages 813–820. IEEE, 2018.

Program committees and reviewing activities

- 2020 *External reviewer* of MobileSoft 2020, 7th IEEE/ACM International Conference on Mobile Software Engineering and Systems, Yongsan-gu, Seoul, South Korea.
External reviewer of SEAMS 2020, 15th International Symposium on Software Engineering for Adaptive and Self-Managing Systems, Yongsan-gu, Seoul, South Korea.
Program committee member of MMHS20, 4th International Workshop on (Meta)Modelling for Healthcare Systems, Bergen, Norway.
- 2019 *External reviewer* of ESEM 2019 (Emerging Results and Vision Papers), 13th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement, Porto de Galinhas, Brazil.
External reviewer of SEH 2019, the 1st International Workshop on Software Engineering for Healthcare, co-located with ICSE 2019, Montreal, Canada.
- 2018 *External reviewer* of MobileSoft 2018, the 5th IEEE/ACM International Conference on Mobile Software Engineering and Systems, Gothenburg, Sweden.

Given seminars and presentations

- September 2020 **A Reference Architecture for Personalized and Self-adaptive e-Health Apps**, at CASA 2020, L'Aquila (Italy).
- October 2019 **CluStream-GT: Online Clustering for Personalization in the Health Domain**, at Web Intelligence 2019, Thessaloniki (Greece).
- May 2019 **Self-Adaptation in Mobile Apps: a Systematic Literature Study**, at SEAMS 2019, Montreal (Canada).
- November 2018 **Exploring Clustering Techniques for Effective Reinforcement Learning based Personalization for Health and Wellbeing**, at SSCI-IEEE 2018, Bengaluru (India).
- March 2018 **Self Adapting e-Health Apps**, at ICT.OPEN 2018, Amersfoort (The Netherlands).

Teaching

Courses

- Jan 2020 **Learning Machines**, Vrije Universiteit Amsterdam, 45 students, MSc level. 25h
- Sept-Oct 2019 **Green Lab (empirical software engineering for energy efficiency)**, Vrije Universiteit Amsterdam, 30 students, MSc level. 15h
- Sept-Oct 2018 **Green Lab (empirical software engineering for energy efficiency)**, Vrije Universiteit Amsterdam, 20 students, MSc level. 12h
- Sept-Oct 2017 **Green Lab (empirical software engineering for energy efficiency)**, Vrije Universiteit Amsterdam, 20 students, MSc level. 4h

Feb-May 2015 **Programming Your World**, Amsterdam University College, 25 students, BSc level. 16h

Sept-Dec 2014 **Programming Your World**, Amsterdam University College, 25 students, BSc level. 16h

Master thesis supervision

2019 Randy de Vries, *Redesigning an Android experimentation framework for extensibility and testability*. Role: Second reviewer.

2019 Anouk Neerincx, *Tailoring Online Cognitive Behavioral Therapy via Communication Analysis and Reinforcement Learning*. Role: Daily Supervisor.

2017 Amaka Atoyebi, *Exploring how location-awareness is realized in Android mobile apps*. Role: Daily Supervisor.

Bachelor thesis supervision

2019 Maria Sanchez Pineiro, *App Reviews Analysis with Machine Learning*. Role: Second reviewer.

2019 Jakob Kiselica, *Graphical User Interface for User Review Analysis using Machine Learning*. Role: Second reviewer.

2019 Ted Asiamah, *End users' perception of Android run-time permissions in React Native apps*. Role: Second reviewer.

2018 Adhivira Putra Theodorus, *Development of synthetic Android applications for Energy efficiency benchmarking*. Role: Second reviewer.

2018 Marit Leijnse, *Exploring how location-awareness is realized in Android mobile apps*. Role: Daily Supervisor.

Technical knowledge

- + Programming languages: Python, C, Racket, Java, PHP, Javascript, SQL, Bash, R, \LaTeX
- + Website development using HTML5, CSS3, and PHP
- + Website development using Django for Python
- + Excellent knowledge of Android.
- + Excellent knowledge of AutoCAD.
- + Good knowledge of MPI for C.
- + Good knowledge of EMACS.
- + Good knowledge of Arduino.

Referees

Dr. Pepijn Van De Ven, Senior Lecturer in the department of Electronic and Computer Engineering, University of Limerick, Rep. of Ireland.

E: pepijn.vandeven AT ul.ie

P: +353 (0) 61 202925

Pepijn Van De Ven is the supervisor of my current job as Research Assistant.

Prof. Dr. Patricia Lago, *Head of the Software and Services research group at the Department of Computer Science, Faculty of Science, Vrije Universiteit Amsterdam, the Netherlands.*

E: p.lago AT vu.nl

P: +31 (0) 20 59 87745

F: +31 (0) 20 59 87728

Patricia Lago was a supervisor for my PhD research.

Prof. Dr. A.E. Eiben, *Head of the Computational Intelligence research group at the Department of Computer Science, Faculty of Science, Vrije Universiteit Amsterdam, the Netherlands.*

E: a.e.eiben AT vu.nl

P: +31 (0) 20 59 87758

A.E. Eiben was the other supervisor for my PhD research.

Dr. Ivano Malavolta, *Assistant Professor in the Software and Services research group at the Department of Computer Science, Faculty of Science, Vrije Universiteit Amsterdam, the Netherlands*

E: i.malavolta AT vu.nl

P: +31 (0) 20 59 83548

Ivano Malavolta was a co-supervisor for my PhD research.

Dr. Mark Hoogendoorn, *Associate Professor in the Computational Intelligence research group at the Department of Computer Science, Faculty of Science, Vrije Universiteit Amsterdam, the Netherlands.*

E: m.hoogendoorn AT vu.nl

P: +31 (0) 20 59 87772

Mark Hoogendoorn was the other co-supervisor for my PhD research.