



CURRICULUM VITAE (CVA)

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Part A. PERSONAL INFORMATION

CV date

2/06/2023

First name	José Raúl		
Family name	Romero Salguero		
Open Research and Contributor ID (ORCID)(*)	0000-0002-4550-6385		

A.1. Current position

Position	Associated professor		
Initial date	14/11/2017 (accredited since May 2013)		
Institution	University of Córdoba		
Department/Center	Dept. Computer Science and Numerical Analysis, School of Engineering Sciences		
Country	Spain		
Key words	Data science; Machine learning; Democratisation of data science; Software analytics; Search-based software engineering		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

Period	Position/Institution/Country/Interruption cause
2017-present	Associate professor (Titular Universidad), U. Córdoba, Spain
2011-2017	Associate professor (Contratado Doctor), U. Córdoba, Spain
2007-2011	Assistant professor (Prof. Colaborador Doctor), U. Córdoba
2006-2007	Assistant professor (Prof. Ayudante), U. Córdoba, Spain
2004-2005	Research assistant, Univ. Málaga, Spain
2002-2003	Senior IT consultant, VASS Consultoría de Sistemas, Madrid
2001-2002	IT consultant, PricewaterhouseCoopers, Madrid, Spain
1999-2001	Software engineer, Global Teleworking SL, Málaga, Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Computer Science	University of Málaga	2007
Master's degree in New Technologies applied to Education	University of Málaga	2007
Master's degree in Computer Science	University of Málaga	2003
BSc in Computer Engineering	University of Córdoba	1998

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Dr. Romero has a PhD from the University of Málaga (2007). He began working in the Dept. of Computer Science at the University of Cordoba in January 2006. He is currently an

Associate Professor since November 2017. Prior to academia, he worked (1999-2003) as a Software engineer and IT consultant in companies like PricewaterhouseCoopers (Big4).

His current research interests include the composition of workflows in the field of automated machine learning (AutoML), the interoperability and representation of scientific workflows, the development of explainable techniques in data science that involve the human in the decision-making process of knowledge extraction (human-in-the-loop), as well as its applications to software analytics, search-based software engineering and predictive maintenance. Earlier in his career, Dr. Romero was trained in architectural specifications and the development of domain-specific modelling languages. Since 2007 he has been working on the development of evolutionary data mining techniques, maintaining his interest in their application to the field of software analytics and, in particular, focusing on the end user, e.g. with interactive techniques. This last point drifted into the field of AutoML, interaction and explainability (XAI) for the democratisation of data science, focused on the citizen.

He has published over 120 articles, including 31 papers in international journals (28 indexed in JCR), over 60 articles in conferences (several rated CORE A/A+, including ICSE, IEEE EDOC, IEEE CEC or GECCO) and 6 book chapters. He is editor of a book on software analytics and optimisation (to appear in 2022, Springer). He has an h-index of 22 (Google Scholar) and a Crown-index of 3.047. He also collaborates actively with Spanish and international researchers (mostly from Univ. of Bristol, Univ. of the West of England, Virginia Tech and Chalmers Univ. of Technology). In the last 5 years, 55% of his papers has been co-authored with researchers from external institutions, in an ascending tendency.

In terms of scientific events, he participates annually in the PC of more than 20 Spanish and international conferences in the areas of artificial intelligence (GECCO, IEEE CEC, NaBIC, etc.) and software engineering (IEEE EDOC, SSBSE, ClbSE, etc.). Between 2015 and 2018 he organised the Search Guided Software Engineering (SBSE) Track at the Spanish Software Engineering and Databases Conference (JISBD), in addition to other events related to the SBSE area, such as the Track of SBSE at CEC 2016. He has also been program chair of the Model-driven Software Development Track (JISBD) several times since 2014, including 2019 and 2021. He is the general chair of the 3rd Intl. Summer School on Machine learning- and Search-based Software Engineering (Córdoba, June 2022).

He is a regular project reviewer for the Spanish Research Agency (AEI) since 2008, and other foreign agencies (Argentina, Vietnam). He has been an expert member collaborating with the Spanish Standardisation Agency (2008-2018), and since December 2021 is a member of the Advisory Board of the European Association for Data Science (EuADS).

He is Principal Investigator (PI) of active project INTENSE (78,892€) by the Ministry of Science and Innovation (Call 2020), and PI of two transfer contracts with industry by Art. 83 with a telecom company (2016-2017, 10,800€) and insurance company (2020-present, 60,738€), the latter applying data science to mobility incidences. He has participated in 16 other competitive research projects (6 Spanish, 2 regional and 8 networks), and in a contract (Art. 83, Call COINCIDENTE) with the Spanish Army on predictive maintenance (2019-2021, 0.5M€).

To date, he has supervised of 3 PhD theses in the areas of data mining (2013, 2014) and search-based software engineering (2018), the latter having been awarded the National prize for Young Researchers in 2019, and the “Frances Allen” Prize by AEPIA (Spanish AI Association) in 2018. Other 3 theses are in progress about the automation of data science techniques (AutoML), the representation and interoperability of scientific workflows, and the development of explainable methods of data science. Dr. Romero has also supervised 12 Master’s and more than 45 Bachelor’s theses.

In terms of dissemination Dr. Romero is a regular participant in the European Researchers Night. In 2021 he participated in “Patios de Ciencia” with an activity on the explainability of AI. He has regularly participated in teaching innovation projects, coordinating one of them. Since 2020, he is director of the Online Master’s Degree in Data Science of the Univ. Córdoba. In terms of administrative and management positions, between 2014 and 2018 Dr. Romero was

Vice dean of Research and External Relations of the School of Engineering Sciences of the University of Córdoba, and representative member of CODDII.

Part C. RELEVANT MERITS

C.1. Publications

de la Torre-López, José; Ramírez, Aurora; Romero, José Raúl. *Artificial intelligence to automate the systematic review of scientific literature*. Computing, May 2023. Springer. <https://doi.org/10.1007/s00607-023-01181-x>

Ramírez, Aurora; Barbudo, Rafael; Romero, José Raúl. *An experimental comparison of metaheuristic frameworks for multi-objective optimization*. Expert Systems, vol 4, issue 4, e12672. May 2023. Wiley. ISSN: 1468-0394.

Ramírez, Aurora; Feldt, Robert; Romero, José Raúl. *A Taxonomy of Information Attributes for Test Case Prioritisation: Applicability, Machine Learning*. ACM Transactions on Software Engineering and Methodology, 32(1):1-42, Art.No. 21. 2023. ACM DL.

Barbudo, Rafael; Ramírez, Aurora; Servant, Francisco; Romero, José Raúl. 2021. *GEML: A grammar-based evolutionary machine learning approach for design-pattern detection*. Journal of Systems and Software, 2021. Springer. Vol. 175.

Ramírez, Aurora; Romero, José Raúl; García, Carlos; Ventura, Sebastián. 2019. *JCLEC-MO: a Java suite for solving many-objective engineering problems*. Engineering Applications of Artificial Intelligence, Elsevier. 81:14-28.

Ramírez, Aurora; Romero, José Raúl; Simons, Christopher. 2019. *A Systematic Review of Interaction in Search-Based Software Engineering*. IEEE Transactions of Software Engineering, IEEE. 45(8):760-781.

Ramírez, Aurora; Romero, José Raúl; Ventura, Sebastián. 2018. *Interactive Multi-Objective Evolutionary Optimization of Software Architectures*. Information Sciences, Elsevier. 463-464:92-109.

Ramírez, Aurora; Parejo, José Antonio; Romero, José Raúl; Segura-Rueda, Sergio; Ruiz-Cortés, Antonio. 2017. *Evolutionary composition of QoS-aware web services: A many-objective perspective*. Expert Systems with Applications. 72:357-370.

Ramírez, Aurora; Romero, José Raúl; Ventura, Sebastián. 2015. *An approach for the evolutionary discovery of software architectures*. Information Sciences. 305: 234-255.

Luna, José María; Romero, Cristóbal; Romero, José Raúl; Ventura, Sebastián. 2015. *An Evolutionary Algorithm for the Discovery of Rare Class Association Rules in Learning Management Systems*. Applied Intelligence. 42(3):501-513.

Luna, José María; Romero, Cristóbal; Romero, José Raúl; Ventura, Sebastián. 2014. *On the Use of Genetic Programming for Mining Comprehensible Rules in Subgroup Discovery*. IEEE Transactions on Cybernetics. 44: 2329-2341.

C.2. Conferences

Ramírez, Aurora; Delgado-Pérez, Pedro; Valle, Kevin; Medina-Bulo, Inmaculada; Romero, José Raúl. *Interactivity in the Generation of Test Cases with Evolutionary Computation*. In Proc. of the 3rd Intl. Workshop on Artificial Intelligence in Software Engineering (AIST 2023) (16th IEEE ICST Conference 2023). Dublin (Ireland), April 2023.

Ramírez, Aurora; Delgado-Pérez, Pedro; Valle, Kevin; Medina-Bulo, Inmaculada; Romero, José Raúl. 2021. *Interactivity in the Generation of Test Cases with Evolutionary Computation*. IEEE Conference on Evolutionary Computation (CEC). June 2021. Krawow, Poland.

Barbudo, Rafael; Ventura, Sebastián; Romero, José Raúl. *Grammar-based evolutionary approach for automatic workflow composition with open preprocessing sequence*. 13th World Congress on Nature and Biologically Inspired Computing (NaBiC'21), December 2021. Seattle, USA. Springer.

Romero, José Raúl; Ramírez, Aurora; Simons, Christopher. *Looking for novelty in SBSE problems*. XXIV Jornadas en Ingeniería del Software y Bases de Datos (JISBD'19). Septiembre 2019, Cáceres, Spain. SISTEDES.

Salado-Cid, Rubén; Romero, José Raúl. Interoperabilidad de flujos de trabajo intensivos en datos en Industria 4.0: caso de estudio. I Workshop en Aplicaciones de la Inteligencia Artificial para la Industria 4.0 (Industria'18 en CAEPIA 2018). Octubre 2018, Granada, Spain.

Ramírez, Aurora; Romero, José Raúl; Ventura, Sebastián. *On the Effect of Local Search in the Multi-objective Evolutionary Discovery of Software Architectures*. In Proc. of the 2017 IEEE Congress on Evolutionary Computation (IEEE CEC 2017). San Sebastián (Spain), June 2017.

Ramírez, Aurora; Romero, José Raúl; Ventura, Sebastián. *An Extensible JCLEC-based Solution for the Implementation of Multi-Objective Evolutionary Algorithms*. Evolutionary Computation Software Systems (EvoSoft) Workshop at . 17th Annual Conference Companion on Genetic and Evolutionary Computation (GECCO'15), pp. 1085-1092. Madrid. July 2015.

Ramírez, Aurora; Romero, José Raúl; Ventura, Sebastián. *On the performance of Multiple Objective Evolutionary Algorithms for Software Architecture Discovery*. 16th annual conference companion on Genetic and Evolutionary Computation Conference (GECCO 2014), pp. 1287-1294. Vancouver, BC, Canada, July 2014. ACM. *Best paper of the SBSE track*.

Ramírez, Aurora; Romero, José Raúl; Ventura, Sebastián. *A Novel Component Identification Approach Using Evolutionary Programming*. 15th annual conference companion on Genetic and Evolutionary Computation Conference (GECCO 2013), pp. 209-210. Amsterdam (The Netherlands). July 2013. ACM.

Luna, José-María; Romero, José Raúl; Romero, Cristóbal; Ventura, Sebastián. *Discovering Subgroups by means of Genetic Programming*. European Conference on Genetic Programming (EuroGP 2013), pp.121-132. Vienna (Austria), April 2013. Springer LNCS 7831

C.3. Research projects

PID2020-115832GB-I00. *INTENSE: Improving the data science user experience with computational intelligence techniques*. PI: Romero, José Raúl; Ventura, Sebastián. 1/09/2021-31/08/2024. 78,892 EUR. National project. Role: PI.

RED2018-102472-T. *Red de investigación en Ingeniería de Software basada en Búsqueda*. PI: Medina-Bulo, M. Inmaculada (Univ. Cádiz). 1/01/2020 - 31/12/2022. 10,000 EUR. Research network. Role: Researcher.

TIN2017-83445-P. *EMERaID: EMERging trends in Data analysis*. PI: Ventura, Sebastián. 01/01/2018 - 31/12/2020. 57,111 EUR. National project. Role: Researcher.

TIN2015-71841-REDT. *Red de Excelencia en Ingeniería de Software basada en Búsqueda*. PI: Medina-Bulo, M. Inmaculada (Univ. de Cádiz). 11/11/2015 - 10/11/2017. 20,000 EUR. National project. Role: Researcher.

TIN2014-55252-P. *Data mining with more flexible representations*. PI: Ventura, Sebastián. 01/01/2015-31/12/2017. 69,900 EUR. National project. Role: Researcher.

C.4. Contracts, technological or transfer merits

Aplicación de la ciencia de datos para la mejora de la seguridad vial, movilidad y gestión de flotas de vehículos. Company: Gestorías asociadas Gesthispania S.L. PI: Romero, José Raúl; Ventura, Sebastián. 20/01/2020-31/10/2022. 60,738EUR. Role: PI.

MANPREDIC: Mantenimiento predictivo para plataformas terrestres. Institution: Spanish Ministry of Defense. PI: Ventura-Soto, Sebastián. Starting date: 1/12/2019-30/11/2021. 478,957 EUR. Role: Participant (as Project leader).

Asesoría y mentorización a Telefónica. Company: Telefónica S.A. PI: Romero, José Raúl. 8/03/2016 (6 months); 10,980 EUR. Role: PI.