CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum cannot exceed 4 pages. Instructions to fill it are available in the website.

Part A. PERSONAL INFORMATION

CV date	03/02/2023

First name	Antonio		
Family name	Ruiz Cortés		
Gender (*)	Male		
Social Security, Passport, ID number			
e-mail	aruiz@us.es	Web: www.isa.us.es/3.0/antonio-ruiz-cortes/	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-9827-1834	

A.1. Current position

Position	Catedrático de Universidad	
Initial date	02/11/2016	
Institution	Universidad de Sevilla	
Department/Center	Lenguajes y Sistemas Informáticos	ETS. Ing. Informática
Country	Spain	
Key words	Business process management, Service engineering, Software engineering	

A.2. Previous positions (research activity interruptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
2007 – 2016*	Associate Professor (TU), Univ. Sevilla, Spain. *Accredited as CU since 2013
2004 – 2007*	Assistant Professor (TEU), Univ. Sevilla, Spain. * Accredited as TU since 2005
1998 – 2004	Lecturer, Univ. Sevilla, Spain
1996 – 1998	Lecturer –(Part-Time first 12 months), Univ. Huelva, Spain
1992 – 1997	Software Engineer, DEINSA (SME), Spain. *Head of IT Department since 1994
1990 – 1990	IT support – Developer, Informática el Corte Inglés, Spain.

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Software Engineering	Univ. Sevilla, Spain. (Extraordinary Award)	2002
M.Sc. in Computer Engineering	Univ. Sevilla, Spain	1996
Graduated in Computer Engineering	Univ. Sevilla, Spain (Extraordinary Award)	1992

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

Scientific contributions. His doctoral thesis focused on automatically generating service-level agreements (SLAs) among computational services. As the main contribution, he proposed a formal model for SLAs and a basic catalogue with three operations to analyse them. This analysis was automated by considering each operation in terms of constraints satisfaction optimisation problems (CSOP). Since then, many contributions have been derived from analysing more abstract and complex SLA models. This solution has been adapted into different web service technologies such as WS-Agreement, OWL-S, Linked USDL, and OAS.

With his first PhD student, D. Benavides, he proposed the automatic analysis in product lines of service-based systems following a similar approach to the one introduced in his thesis. This time it was applied to Feature Models (FMs), obtaining a six-operation catalogue. Since then, many contributions have been derived from addressing more complex FMs and using them in different domains. The seminal work of this research line is recognised as one of the most influential of CAISE. It has also received the distinction of *Most Influential Paper Award* in SPLC'2017 and VAMOS'2020. An additional work presenting the catalogue of analysis operations, including a literature review, is also considered seminal.

With M. Resinas, as a postdoctoral researcher, he proposed business process management analysis following the same approach. In this case, they used Description Logic instead of CSOP to apply it to business processes with resource information and performance indicators. Since then, contributions have continued to be made derived from addressing configurable process models, automatic SLA analysis for business processes, and predicting compliance or violation of these SLAs. With S. Segura, they were pioneers in generating functional and performance metamorphic tests on FM analysis engines. They also started a research line on Search-Based Software Engineering focused on using metaheuristics to optimise solutions to some hard problems in Software Engineering and automate the replicability of experiments. With Dr Fernández, he explores how to lower the operational cost of micro-service architectures and make them more reliable by taking advantage of the information available in user agreements, service providers, and third-party services. His latest line of work is on Intelligent Contract Management with Coevolutionary Hybrid Intelligence.

Community Services. Antonio regularly participates in the premier international conferences in his main research lines. He has served as a PC member in more than 90 committees of these conferences, highlighting his participation in ICSE (best reviewer award in 2021), ESEC, CAISE, ICSOC, SERVICES and SPLC, all considered class 1 and 2 in the SCIE ranking. He has been general co-chair of SPLC2017, the industrial track in ISCOC2017, SISTEDES2018, BPM2020 and ICSOC2022. He also chaired the scientific committee of JCIS 2008, JISBD 2012, and ICSOC 2023. He has participated in more than 35 doctoral thesis courts. He is also an associate editor in Computing, International Journal on Cooperative Information Systems, and formerly Mathematical Problems in Engineering.

Training, collaborations and leadership. Antonio has (co)-supervised 16 PhD theses. His training capacity is endorsed by the many recognitions of his students, including three Extraordinary Doctoral Awards, two Fulbright scholarships, a finalist recognition in the Best SISTEDES PhD Thesis National Award, and first prize of the ACM Student Research Competition at ICSE. He has been responsible for 8 FPI and 3 FPU grants. It has participated in the postdoctoral training of 8 researchers (2 Juan de la Cierva, 3 Junta de Andalucía post-doc and three PhDs trained by others). All the researchers he trained are still doing research. Four in companies (VMWARE, Tenable) and foreign universities (Univ. of Unijui, Univ. of Linz), one at the Univ. of Malaga, and the rest at the Univ. of Seville (1 CU, 9 TU, and 8 in different positions), two of which have already formed another group.

He has published with more than 60 authors of 20 international groups, and he was host to A. Fox and S. Dustdar during their sabbaticals. He has been the coordinator of the Spanish Network of Excellence *Services Science and Engineering* (2015-2021), and the President of the Spanish Society on Software Engineering (SISTEDES) (2018-2022). He leads the Unit of Excellence SCORE (Smart Computer systems Research and Engineering) of the Univ. of Seville and the research group *Applied Software Engineering* since its foundation, and he is the Deputy Director of the Research Institute of Informatics Engineering (I3US). He has been recognised three research sexenios (98-15) and a technology transfer sexenio (98-07). He is also AAIA Fellow, elected member of the Academia Europaea, and National Award on Informatics (ARITMEL Award) by the Spanish Society on Informatics (SCIE).

Part C. RELEVANT MERITS
C.1. Publications (complete list of publications is available from [DBLP](#), [Google Scholar](#) or Scopus).

1. J. C. Alonso, A. Martin-Lopez, S. Segura, J.M. García, A. Ruiz-Cortés: ARTE: Automated Generation of Realistic Test Inputs for Web APIs. IEEE Trans. Softw. Eng. 49(1): 348-363 (2023).
2. A. Martin-Lopez, S. Segura, C. Muller, A. Ruiz-Cortes. 2021. *Specification and Automated Analysis of Inter-Parameter Dependencies in Web APIs*. IEEE Trans. on Services Computing.
3. C. Muller, A.M. Gutierrez, P. Fernández, O. Martín-Díaz, M. Resinas, A. Ruiz-Cortés. 2021. *Automated Validation of Compensable SLAs*. IEEE Trans. on Services Comput. 14(5): 1306-1319.
4. C. Cabanillas, M. Resinas, A. Ruiz-Cortés. 2020. *A Mashup-based Framework for Business Process Compliance Checking*. IEEE Trans. on Services Computing (Early Access). DOI: *10.1109/TSC.2020.3001292*
5. A. Río-Ortega, M. Resinas, A. Durán, B. Bernárdez, A. Ruiz-Cortés, M. Toro. 2019. *Visual ppinot: A Graphical Notation for Process Performance Indicators*. Bus. Inf. Syst. Eng. 61(2): 137-161.

6. J. A. Parejo, A. B. Sánchez, S. Segura, A. Ruiz-Cortés, R. E. Lopez-Herrejon, A. Egyed. 2019. *Multi-objective test case prioritisation in highly configurable systems: A case study*, Journal of Systems and Software, 122:287-310. **Special relevance publication award US 2019**.
7. J. Troya, S. Segura, J. A. Parejo, A. Ruiz-Cortés. 2018. *Spectrum-Based Fault Localisation in Model Transformations*. ACM Transactions on Software Engineering and Methodology. 27:1-50.
8. S. Segura, J. A. Parejo, J. Troya, A. Ruiz-Cortés. 2018. *Metamorphic Testing of RESTful Web APIs* IEEE Trans. on Software Engineering. 44:1083-1099.
9. A.E. Márquez-Chamorro, M. Resinas, A. Ruiz-Cortés. 2018. *Predictive Monitoring of Business Processes: A Survey*. IEEE Trans. on Services Computing. 11(6): 962-977.
10. Sergio Segura, Gordon Fraser, Ana B. Sánchez, A. Ruiz-Cortés. 2016. *A Survey on Metamorphic Testing*. IEEE Trans. on Software Engineering. 42:805-824.
11. D. Benavides, S. Segura, A. Ruiz Cortés. 2010. *Automated Analysis of Feature Models 20 Years Later: A Literature Review*. Information Systems, 35(6): 615-636. **+1.4K citations in Google**

C.2. Conferences (All SCIE class 1 and 2 ranked)
1. A. Martin-Lopez, S. Segura, A. Ruiz-Cortés: *Online testing of RESTful APIs: promises and challenges*. ESEC/SIGSOFT FSE 2022: 408-420 . **Distinguished Paper Award**
2. A. E. Márquez-Chamorro, Isabel A. Nepomuceno-Chamorro, Manuel Resinas, Antonio Ruiz-Cortés: *Updating Prediction Models for Predictive Process Monitoring*. CAiSE 2022: 304-318
3. A. del-Río-Ortega, J. Peña, M. Resinas, A. Ruiz-Cortés. *Productivity Challenges in Digital Transformation and its Implications for Workstream Collaboration Tools*. HICSS 2021: 1-10.
4. A. Martin-Lopez, S. Segura, Antonio Ruiz-Cortés. *RESTest: Black-Box Constraint-Based Testing of RESTful Web APIs*. ICSOC 2020: 459-475.
5. B. Estrada-Torres, A. del-Río-Ortega, M. Resinas, A. Ruiz Cortés. *On the Relationships Between Decision Management and Performance Measurement*. CAiSE 2018: 311-326.
6. A. Gamez-Diaz, P. Fernandez, A. Ruiz–Cortés. *An analysis of RESTful APIs offerings in the industry*. ICSOC 2017:589-604
7. A. Río-Ortega, F. García, M. Resinas, E. Weber, F. Ruiz, A. Ruiz Cortés. *Enriching Decision Making with Data-Based Thresholds of Process-Related KPIs*. CAiSE 2017: 193-209.
8. J.M. García, O. Martín-Díaz, P. Fernandez, A. Ruiz-Cortés, M. Toro. *Automated Analysis of Cloud Offerings for Optimal Service Provisioning*. ICSOC 2017: 331-339.
9. A. del-Río-Ortega, A.M. Gutiérrez, A. Durán Toro, M. Resinas, A. Ruiz Cortés. *Modelling Service Level Agreements for Business Process Outsourcing Services*. CAiSE 2015: 485-500.
10. D. Benavides, A. Ruiz-Cortés, P. Trinidad. *Automated Reasoning on Feature Models*. CaiSE 2005: 491-503. **+880 citations in Google.**

C.3. Research projects (only those I have been PI of in the last 5 years)
1. IRIS. Digital Transformation of the Public Administration driven by Intelligent Contracts. *Ministerio Ciencia e Innovación (MCI)*. TED2021-131023B-C2. 219.075 €. PI: S. Segura and **ARC**.
2. PERSEO: Mejorando la operación y mejora continua de procesos en servicios digitales por medio de la colaboración bot-humano. PID2021-126227NB-C21. PI: M. Resinas and **ARC.**
3. Infraestructuras comunes de computación de altas prestaciones para el I3US. *MCI*. EQC2019-006325-P. 358.883 €. 01/01/20-31/12/21. PI: **ARC**
4. HAMLET. Tecnologías para mejorar la fiabilidad, personalización y costes de operación de aplicaciones basadas en servicios software y servicios basados en conocimiento. *MCI*. RTI2018-101204-B-C21. 01/01/19-31/12/21. 141.000 €. PI: S. Segura and **ARC**.
5. APOLO. Technologies for highly reliable service-oriented systems regulated by user contracts. *Junta de Andalucia (FEDER)*. US-1264651. 01/01/19-31/12/21. 90.000 €. PI: S. Segura and **ARC.**
6. ANA: Automatización del gobierno confiable de infraestructuras reguladas por Acuerdos de nivel de servicio. *Andalucía Tech*. 01/03/2020 - 31/09/2021. 75.046 €. PI: P. Fernández and **ARC.**
7. RISE_BPM. Propelling Business Process Management by Research and Innovation Staff Exchange. *H2020 (Marie Sklodowska-Curie Research and Innovation Staff Exchange)*. 01/05/14 – 01/05/18. 855.000€ (94.500€ for University of Seville). PI: M. Resinas and **ARC.**

C.4. Contracts, technological or transfer merits

Contracts. (last 5 years).

1. GALIBO: *Soporte en la elaboración de la propuesta Técnica para el Contrato de Servicios para la Integración y Normalización de los Sistemas de Información de la Consejería de Hacienda y Administración Pública*. 30/10/2019 – 31/12/2021. *Everis.* 30.000 €. PIs: P. Fernández and ARC.
2. REDIAM: *Estudio Previo de Requerimientos Tecnológicos y Funcionales de un Prototipo para el Almacenamiento y Procesamiento de Grandes Conjuntos de Datos para su Conversión en Soluciones para la Gestión Ambiental*. Consejería de Medio Ambiente y Ordenación del Territorio de la Junta de Andalucía. 01/06/2018 -- 31/01/2019. 17.666€. PIs J.Ojeda and ARC.
3. SABIUS: *Desarrollo y Despliegue de un Servicio de Análisis bibliométrico de la US*. University of Seville. 03/2017-11/2017. 15.000 €. PIs: P. Fernández and ARC.
4. GAUSS: *Soporte en la elaboración de la propuesta técnica para el contrato de Servicios para la Integración y Normalización de los Sistemas de Información de la Consejería de Hacienda y Administraciones Públicas*. EVERIS. 11/16-06/18. 35.000 €. PIs: P. Fernández and ARC.

Patents. International patent requested in collaboration with the company UNIDASH, based in California, on automatic analysis of conformity in business processes. System and Method for compliance event and incident management (CEIM). P. Fernández, M. Resinas, A. Ruiz Cortés, A. Sood Joshi. Application No.: 13602291. March 2012. http://www.google.com/patents/US20140067448.

Intellectual property on 14 prototypes that have been the core of his participation in the different R&D contracts. The cost of licensing and adaptation of these tools by 5 companies in 11 R&D contracts amounts to more than 300K euros. There is also evidence of many end-users using these tools. All these tools either have been presented at international conferences or are supported by a publication. As for the FAMA tool, it has already received more than 200 citations. He has promoted two Spin-Off: Personal e-commerce and ISALABS from these registered tools. Among the users of these tools we can find the ICT support services of the Andalusian Health Service and the Regional Ministry of Economy and Finance of the Regional Government of Andalusia. Most relevant tools:

1. A. del Río-Ortega, C. Cabanillas, M. Resinas, A. Ruiz-Cortés. PPINOT. 27/01/2012. (SE-738-10). Used in 2 R&D contracts by ISOTROL and ICINETIC. The cost of licensing and adaptation amounts to 22.700 €. It has also been used in to compute process performance indicators in service level agreements by the Andalusian Health Service. Also, it has been used with the same aim at the Consejería de Hacienda y Administraciones Públicas de la Junta de Andalucía. It is being used for teaching at the University of Tilburg (Holanda) and UNIST (Corea del Sur).
2. C. Cabanillas, A. del Río-Ortega, M. Resinas, A. Ruiz-Cortés. CRISTAL (Tool for the analysis and management of human resources in busines processes). 27/01/2012 (SE-738-11). It has been the core of the solution delivered to the department of IT compliance at ENEL ENERGY EUROPE (before ENDESA) in the Project BPCMS. It has also been used in a technology transfer project performed by the WU Wien with Siemmens.
3. A. Ruiz-Cortés, D. Benavides, J. A. Galindo, P. Trinidad, and S. Segura. *BeTTy Framework.* Territorial Registry of Intellectual Property of Andalusia (SE-64-11). University of Seville. Date: 24/01/2011. Countries in exploitation: Saudi Arabia, Algeria, Austria, Belgium, Brazil, Canada, Colombia, Egypt, Spain, United States, and other 12. Entities that are exploiting it: Companies: ABB Inc, Schnapptack GmbH, Unisys, EASii IC and others. Universities: INRIA, Simon Fraser University, University of Passau, University of Twente, UCLA and others.
4. A. Ruiz-Cortés, D. Benavides, Pablo Trinidad, and S. Segura. *SPL Reasoner. FAMA Tool Suite.* Territorial Registry of Intellectual Property of Andalusia (SE-01314). University of Seville. Date: 21/12/2007. Countries in exploitation: Denmark, Spain, United States, France, Ireland, United Kingdom, Korea and Germany. Entities that are exploiting it: Univ. of Magdeburg, Univ. of Vanderbilt, S.A. Ikerlan, pure::systems, Univ. Paris 1 Phantéon - Sorbone, INRIA, y otros.