MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

Part A. PERSONAL INFORMATION

		CV date	05/02/2021

First and Family name	Antonio Ruiz Cortés		
Researcher numbers		Researcher ID	B-9056-2008
		ORCID code	0000-0001-9827-1834

A.1. Current position

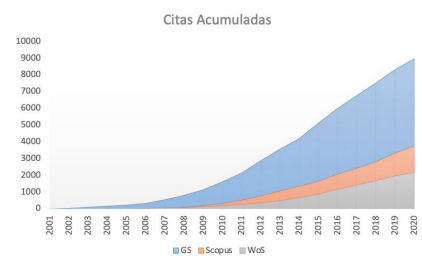|	
Name of University	University of Seville
Department	Languages and computers systems
Address and Country	Av/ Reina Mercedes S/N 41012 Seville, Spain
Phone number	954556874 E-mail aruiz@us.es
Current position	Catedrático de Universidad From 02/11/2016
Espec. cód. UNESCO	120317, 120318, 120311
Keywords	Business process management, service engineering, software engineering

A.2. Education

Qualification	University	Year
Graduated in Computer Engineering	University of Seville (Extraordinary Award)	1992
M.Sc. in Computer Engineering	University of Seville	1996
PhD in Software Engineering	University of Seville (Extraordinary Award)	2002

A.3. General quality indicators of the research results

Thesis (All/-2008/Awarded)	13/11/3	Research Sexenios	3: 98-2015
International thesis supervised	12 out of 13	Transfer Sexenios	1: 98-2007
Citations WoS/Scopus/Google Citations last 5 years (W/SC/GS)	2206/ 3791/ 9354 1296/ 2081/ 3870	Projects as PI: Europ + National + Regional	15 = 3+7+5 (2.7M€)
Citations/year 2015-19 (W/SC/GS)	260 / 416 / 774	Committees directed	5
JCR papers (Total = Q1—Q4)	55=29+19+3+4	R&D Contracts as PI	20 (954K€)
H Index (W/SC/GS)	25 / 30 / 46	Total Funding	3,6 M€
SCIE Conferences, Class 1/2/3 [1]	59= 5 + 45 + 9	Reg. Software / Patents	14 /1

According to Scopus, in the period 2016-2020, Prof. Ruiz journal papers have a field-weighted citation impact (FWCI) of 2.27, meaning that his papers have received 127% more citations than the worldwide average in his area. 70% of these papers are in the top 25% of most cited papers worldwide. For the period 2000-2020 his FWCI is 2.96 and over 57% of his articles are in the top 25% of the most cited.

Citas por Año

Citas Acumuladas

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Antonio Ruiz-Cortés is Professor of Computer Science at the University of Sevilla and elected member of the Academia Europaea. He leads the Unit of Excellence SCORE ("Smart Computer systems Research and Engineering") of the University of Seville and the research group "Applied Software Engineering" since its foundation, as well as the Network of Excellence "Services Science and Engineering" since 2015. Since 2018 Antonio Ruiz is the Spanish Society President on Software Engineering (SISTEDES) and the Deputy Director of the Research Institute of Informatics Engineering (I3US). Between 1990 and 1997, he was in the Computer Industry.

His doctoral thesis focused on the automatic generation of 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 optimization 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 Ph.D. student, D. Benavides, he proposed the automatic analysis in product lines of service-based systems following a very similar approach as the one introduced in his thesis. However, 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. According to Google, the seminal work of this research line is recognized as one of the most influential of CAISE and the one with more citations. 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 collects more than a thousand citations in Google and is the second most cited in the entire history of the journal that published it.

With M. Resinas, the first external doctor incorporated into the ISA group, 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 the generation of 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 optimize solutions to some hard problems in Software Engineering and automate the replicability of experiments. The latter is addressed together with Dr. Durán, head of the research line on Empirical Software Engineering. With Dr. Fernández and Dr. Segura, one of their next challenges is to lower the operational cost of applications with micro-service architecture and make them more reliable by taking advantage of the information available in user agreement, service providers, and third-party services.

Finally, in the context of the SCORE unit of excellence, Prof. Ruiz-Cortés is exploring a new research line on how to achieve smarter computer systems that are also more accountable.

Part C. RELEVANT MERITS

C.1. Publications

1. A. Martín-López, S. Segura, C. Müller, A. Ruiz-Cortes. "Specification and Automated Analysis of Inter-Parameter Dependencies in Web APIs". IEEE Trans. on Services Computing. 2021. In press

2. B. Bernárdez, A. Durán, J.A. Parejo, N. Juristo, A. Ruiz–Cortés. "Effects of Mindfulness on Conceptual Modeling Performance: a Series of Experiments". IEEE Transactions on Software Engineering. 2020. In Press.

3. C. Cabanillas, , M. Resinas, A. Ruiz-Cortés. "A Mashup-based Framework for Business Process Compliance Checking". IEEE Transactions on Services Computing. 2020. In press

4. A. del-Río-Ortega, M. Resinas, A. Durán, B. Bernárdez, A. Ruiz-Cortés, M. Toro: Visual ppinot: A Graphical Notation for Process Performance Indicators. Business & Information Systems Engineering 61(2): 137-161 (2019)

5. J. Troya, S. Segura, J.A. Parejo, A. Ruiz-Cortés. Spectrum-Based Fault Localization in Model Transformations. ACM Trans. Softw. Eng. Methodol. 27(3): 13:1-13:50 (2018)

6. S. Segura, J.A. Parejo, J. Troya, A. Ruiz-Cortés. "Metamorphic Testing of RESTful Web APIs". IEEE Trans. on Software Engineering. 44(11):1083-1099.

7. A.E. Márquez-Chamorro, M. Resinas, A. Ruiz-Cortés. "Predictive monitoring of business process: a survey". IEEE Trans. on Services Computing. 11(6): 962-977

8. J.M. García, P. Fernández, C. Pedrinaci, M. Resinas, J. Cardoso, A. Ruiz-Cortés. "Modeling Service Level Agreements with Linked USDL Agreement". IEEE Trans. Serv. Comp. 2017. 10(1): 52-65

9. S. Segura, G. Fraser, A. Sánchez, A. Ruiz-Cortés. "A Survey on Metamorphic Testing". IEEE Transactions on Software Engineering. 2016. 42(9):805-824.

10. J. García-Galán, P. Trinidad, O. F. Rana, A. Ruiz-Cortés. "Automated configuration support for infrastructure migration to the cloud". Future Generation Comp. Syst. 55: 200-212 (2016)

C.2. Research projects and grants (last 5 years)

1. Infraestructuras comunes de computación de altas prestaciones para el I3US. Ministerio Ciencia e Innovación (MCI). EQC2019-006325-P. 358.883 €. 01/01/20-31/12/21. PI: A. Ruiz Cortés (**ARC**)

2. 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: Sergio Segura and **ARC**.

3. APOLO. Technologies for highly reliable service-oriented systems regulated by user contracts. US-1264651. 01/01/19-31/12/21. 90.000 €. PI: Sergio Segura and **ARC.**

4. 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: Pablo Fernández and **ARC.**

5. 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: Manuel Resinas and **ARC.**

6. BELI. Tecnologías para Servicios Cloud Híbridos, Altamente Configurables y Regulados por ANS. Ministerio de Economía y Competitividad. TIN2015-70560-R. 01/01/16-31/12/18. 123.178 €. PI: Manuel Resinas and **ARC**.

7. COPAS. eCosystems for Optimized Process As a Service. Consejería Innovación, Ciencia y Empresa, Junta de Andalucía (Proyectos de Excelencia Motriz, P12-TIC-1867). 30/01/14- 29/01/18. 297.571 €. PI: **ARC**

C.3. Contracts (last 5 years)

1. GALIBO. "Gobierno Adaptable de Infraestructuras Basado en Acuerdos de Nivel de Servicio". EVERIS. 10/19-12/21. 30.000 €. PIs: Pablo 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€. Codirigido con José Ojeda Zújar.

3. "SABIUS: Desarrollo y Despliegue de un Servicio de Análisis bibliométrico de la US". University of Seville. 03/2017-11/2017. 15.000 €. PIs: Pablo 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: Pablo Fernández and **ARC**.

C.4. Patents (authors in alphabetical order)

International patent requested in collaboration with the company UNIDASH, based in California, in the field of 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. 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 180 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.

C.5. Scientific committees

Prof. Ruiz-Cortés regularly participates in the premier international conferences in his main research lines, namely information systems and software and service engineering. He has served as programme committee member in more than 80 committees of these conferences, highlighting the participation in ICSE, ESEC, CAISE, ICSOC, COOPIS, SERVICES, ER and SPLC, all considered class 1 and 2 in the

SCIE conference ranking [1]. He played an important role in the beginning and consolidation of the *Jornadas de Ciencia e Ingeniería de Servicios (JCIS)*, and chaired its scientific committee in 2008. He also chaired the scientific committee of *Jornadas de Ingeniería del Software y Bases de Datos (JIDBD)* in 2012. He has been general co-chair of SPLC2017, the industrial track in ISCOC2017, SISTEDES2018 and BPM2020. 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 Mathematical Problems in Engineering.

He has been a member of the Doctoral Commission of the University of Seville since 2014. Evaluator of the *Agencia Nacional de Evaluación y Prospectiva* (ANEP) for the area of Computer Science and Information Technologies since 2009. Member of the ANECA's body of expert evaluators since 2014 and of the Netherlands Organization for Scientific Research since 2008. He is also member of the applied research sector programme of the Galician Plan for Research, Development and Technological Innovation of the *Xunta de Galicia* since 2007; and of the *CYTED* Programme since 2011. Since 2006 he has been a representative of the University of Seville in the *Comité Gestor de la Plataforma Tecnológica Nacional de Software y Servicios* that in 2013 was integrated in PLANETIC, the platform for the adoption and dissemination of electronic, information and communication technologies.

C.6.Other merits
- One of the main contributors of SLA4OAI initial draft. The open source standard for describing SLA in APIs proposed by the OpenAPI Initiative [2].
- 4 best-paper awards in ranked SCIE Conferences: SPLC08, CLOSER13, SEAMS14, SCC16.
- 2 MIP-paper awards: SPLC17, VaMoS20.
- Responsible for 8 *FPI* grants, 3 *FPU* grants and 2 *Juan de la Cierva* grants.
- PI of 35 R&D Projects and contracts. 15 obtained in competitive calls: 3 european, 7 from the National Plan, and 5 from the Andalusian Government.
- Out of the PhD students he supervised, three have or had a Postdoctoral contract in Austria and Ireland, one is Associate Professor in the University of Unijui (Brazil) and seven are Associated Professor at the University of Sevilla.
- He ranks in the top 65 in Guide2Research ranking of Spanish scientist in Computer Science and Electronics (http://www.guide2research.com/scientists/). 2nd most cited author in Informatics at the Univ. of Seville, after Emeritus Prof. Mario Pérez. Most cited Spanish and the 3rd European author in Service Engineering, whose national thematic network of excellence coordinates since 2014.
- University of Seville Award for research work of special relevance. 2019. Only one for each of the 5 main branches of knowledge of the university.
- Member of the expert panel to evaluate "Sexenios de Transferencia" 2019. The National Agency for Quality Assessment and Accreditation of Spain, ANECA.
- He has published joint works with more than 60 authors of 20 international groups.
- Member of the governing board of FIDETIA since 2020 (Fundación para la investigación y el desarrollo de las tecnologías de la información en Andalucía).
- Director of the Department of Languages and Computer Systems (US) (2013-2016).
- Deputy Director of Infrastructures of the *ETS de Ingeniería Informática* (US) (2005-2006).
- Extraordinary doctorate and bachelor awards.

C.7.Experience before his academic career
During the second year of his degree, he began to work in the Commercial Division of Informatics of *El Corte Inglés* and later for the company DEINSA. Between 1990 and 1996 he studied and worked at the same time and got specialized in the development of control and information systems in the industrial, environmental and telecommunications sectors.

C.8. Research profiles
Google Scholar: https://scholar.google.es/citations?user=Ka-FHBQAAAAJ&hl=en
DBLP: http://dblp.uni-trier.de/pers/hd/c/Cort=eacute=s:Antonio_Ruiz
Scopus Author ID: https://www.scopus.com/authid/detail.uri?authorId=15120180100

C.9 References
[1] SCIE-GII-GRIN Ranking. http://valutazione.unibas.it/cs-conference-rating/
[2[https://github.com/isa-group/SLA4OAI-Specification/blob/main/versions/1.0.0-Draft.md