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AGENCIA
ESTATAL DE
INVESTIGACIÓN

Part A. PERSONAL INFORMATION

First name	María del Carmen		
Family name	Romero Ternero		
Gender (*)	Female	Birth date	
Social Security, Passport, ID number			
e-mail	mcromerot@us.es		
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-6965-9485		

A.1. Current position

Position	Profesora Titular de Universidad (Tenured Professor)		
Initial date	11/12/2018		
Institution	Universidad de Sevilla		
Department/Center	Dpto. Tecnología Electrónica / ETSI Informática		
Country	Spain		
Key words	Artificial Intelligence, Multiagent Systems, Information Security, Organizational modeling, User-Centered Design, Digital Health		

A.2. Previous positions (research activity interuptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
04/06/2012 – 21/10/2012	Maternity leave for childbirth
22/10/2012 – 30/11/2012	Breastfeeding leave
30/07/2009 – 10/12/2018	Profesor Contratado Doctor / Universidad de Sevilla
21/12/2001 – 19/03/2006	Profesor Asociado / Universidad de Sevilla
01/01/2001– 20/12/2001	Ayudante Escuela Universitaria / Universidad de Sevilla
01/06/1999 – 31/12/2000	Technical Support in research project

A.3. Education

Ingeniería en Informática	Sevilla/Spain	1999
Doctora en Informática	Sevilla/Spain	2005
Máster en Organización y Gestión de Empresas	Sevilla/Spain	2008
Experta en Dirección de Servicios TI de Universidades	Castilla La Mancha/Spain	2015
Máster en Ciencias Cognitivas	Málaga/Spain	2021
P.E. en Ciberseguridad, Riesgos y Seguridad Digital	Garrigues/Spain	2022

Part B. Description of relevant aspects of your trajectory that reflect your interdisciplinary profile

She belongs to TIC150 (Tecnología Electrónica e Informática Industrial) and IBiS205 (Genética Humana y Reproducción) research groups. She has more than 50 scientific publications (journals and conferences) and participation in 16 research projects in the field of applied Artificial Intelligence (5 transfer projects, one of them as main researcher). She worked on the design of intelligent systems to support decision-making in the industrial field, specifically in the electricity sector. During a postdoctoral stay at the HS of Electronics & Computer Science at the University of Southampton (UK) in 2006 she collaborated on HIPARSYS project with the Intelligence, Agent and Multimedia group that led by Dr. Nick Jennings, where she specialized in the design and development of distributed intelligent systems based on autonomous elements and organizational modelling, entering the paradigm of multi-agent systems and machine learning. During her scientific trajectory she has applied this knowledge not only in projects in the industrial field, for the monitoring and control of distributed elements, but also in the field of Education and in the field of Health & Well-being. She has been working on user-centered design in the ARCADE Project, specifically in methods of co-design with children and in techniques of usability and user experience. Her Master Thesis in Cognitive Sciences researched about emotional computing models. Likewise, since 2018 she actively participates in the AI and Human Development Working Group promoted by the Microsoft Chair - UV Privacy and Digital Transformation for the promotion and application of Responsible AI. Two of her doctoral students have already finished their PhD: Montahna's doctoral thesis, on the application of sensing and AI to improve accessibility for visually impaired people with IoT in Smart Cities, and Oprescu's doctoral thesis on the application of machine learning and Responsible AI for the case study of risk prevention in the pregnancy. Now we are exploring validation

techniques in Machine Learning for lung cancer patients in a multicentric environment. She is supervising other two thesis, one related to design new computational emotional models based in machine learning and other related to AI, IoT and cybersecurity in Smart Cities. She has supervised two completed PhD about multiagent systems. Currently she is IP of ARTIFACTS and participating in one research project (autonomic), about deep-learning analysis and cyber-physical systems applied to biodiversity in urban and Natural Environments. Additionally, she submitted previous research proposals to National funding titled Methodology for Data Management in the Context of Heterogeneous Environment and RAI Applications in Health (HERA) and Harmonized Digital Transformation for the Coordination of Domiciliary Social Health Care through Responsible Artificial Intelligence and Integration of heterogeneous data sources (CASIARI), and European proposal titled HAITI: Humane AI for digital Transformation and Inclusiveness. She teaches subjects on topics related to networks, Internet of Things, infrastructures and government and management of IT. She has extensive experience on working with other disciplines. Since 2013, she leads Sinergia project where multidisciplinary teams are formed for the collaborative works in degrees and masters to promote entrepreneurship and research innovations. She has led the enterprise architecture project for digital transformation at the University of Seville during her academic positions as Director of the ICT and as Director of the Digital Strategy (2014-2018). She also, in that same period, she led the implementation of the National Security Scheme in the US as Chief of Information Security Officer, developing the information security policy and its associated regulations, and was a member of the US Personal Data Protection Committee. She is an expert in Information Security at all levels (organizational and technical). She participated in international project about privacy, has been teacher in the Expert course for training DPOs in CFP of University of Seville and reviewer for the official certification. She is a regular contributor to the multidisciplinary magazine La Ley Privacidad where she is member of the scientific board. She has extensive experience in information technology management, holding various positions of responsibility: Dean ETSI Informática (2022-present), Director Digital Strategy (2016-2018), Director ICT (2014-2016), Deputy Director of Infrastructure and Equipment of the ETSI Informática (2010-2014), member of the Security Commission and Electronic Administration Commission of the University of Seville (both 2014-2018). She has extensive experience in public outreach and has participated in various gender equality initiatives funded by the FECYT and the Fundación Descubre. She has been a promoter and person in charge of initiatives financed by the Equality Unit of the University of Seville. She is member of Red de Referentes at US and has specific training in gender equality. She also teaches in expert courses about the impact of digital technologies in gender violence.

Part C. List of Merits Full list available in https://prisma.us.es/investigador/3750
C.1. Publications

1. Saeideh Memarian, Navid Behmanesh-Fard, Pouya Aryai, Mohammad Shokouhifar, Seyedali Mirjalili, **María del Carmen Romero-Ternero** (2024). TSFIS-GWO: Metaheuristic-driven takagi-sugeno fuzzy system for adaptive real-time routing in WBANs, Applied Soft Computing, Volume 155, 2024, 111427, ISSN 1568-4946, doi: 10.1016/j.asoc.2024.111427.
2. Luque, J., Personal, E., Perez, F., **Romero-Ternero, M.C.**, Leon, C. (2023) Low-dimensional representation of monthly electricity demand profiles, Engineering Applications of Artificial Intelligence, Volume 119, 2023, 105728, ISSN 0952-1976, doi:10.1016/j.engappai
3. Gómez-Jemes, L.; Oprescu, A.; Chimenea-Toscano, A.; García-Díaz, L.; **Romero-Ternero, M.C.** (2022). Machine learning to predict pre-eclampsia and intrauterine growth restriction in pregnant women, Electronics, Vol 11, N 19, doi: 10.3390/electronics11193240
4. **M.C. Romero-Ternero**, MC, García-Robles, R., Cagigas-Muñiz, D., Rivera-Romero, O, Romero-Ternero, M.J. (2022). Participant Observation to Apply an Empirical Method of Co-design with Children, Advances in Human-Computer Interaction, doi: 10.1155/2021/1101847.
5. Montanha, A., Oprescu, A., **Romero-Ternero, M.C.** (2022). A Context-Aware Artificial Intelligence-based System to Support Street Crossings For Pedestrians with Visual Impairments, Applied Artificial Intelligence, 36:1, DOI: 10.1080/08839514.2022.2062818
6. Oprescu, A.M., Miró-Amarante, G., García-Díaz, L., Rey, V.E., Chimenea-Toscano, A., Martínez-Martínez, R., **Romero-Ternero, M.C. (coord.)** (2022). Towards a data collection methodology for Responsible Artificial Intelligence in Health: A Prospective and Qualitative Study in Pregnancy, Information Fusion, Special Issue on Advances in Explainable (XAI) and Responsible (RAI) Artificial Intelligence, Volumes 83–84, Pages 53-78, ISSN 1566-2535, https://doi.org/10.1016/j.inffus.2022.03.011

7. **Romero-Ternero, M.C.**, Cagigas-Muñiz, D., García-Robles, R., Oprescu, A. (2021). Usability and User Experience Study with Children for a Mobile Health App, DOI: 10.2196/preprints.30443

8. Montanha, A., Polidorio, A.M., **Romero-Ternero, M.C.** (2021). New Signal Location Method Based on Signal-Range Data for Proximity Tracing Tools, Journal of Network and Computer Applications, S1084-8045(21)00033-3, doi: 10.1016/j.jnca.2021.103006.

9. A. Oprescu, G. Miró-Amarante, L. García-Díaz, L. Beltrán, V.E. Rey, **M.C. Romero- Ternero (coord.)** (2020). Artificial Intelligence in Pregnancy: a Scoping Review, IEEE Access, Early access, DOI: 10.1109/ACCESS.2020.30283332, 2 octubre, 2020. **Award to best paper of month (october 2020) at ETSI Informática.**

10. **M.C. Romero-Ternero**, D. Oviedo-Olmedo, A. Carrasco, J. Luque (2019). A Distributed Approach for Estimating Battery State-Of-Charge in Solar Farms, Sensors, 19(22), 4998, DOI:doi.org/10.3390/s19224998. JCR= 3,03, Q1

11. M.D. Hernández, **M.C. Romero-Ternero**, F. Sivianes, A. Carrasco, J. Ropero (2018): A Hybrid Intelligent Multiagent System for the Remote Control of Solar Farms, Applied Artificial Intelligence, DOI: 10.1080/08839514.2018.1530854. JCR=0,98, Q4

12. D. Oviedo, **M.C. Romero-Ternero**, M.D. Hernández, F. Sivianes, A. Carrasco, J.I. Escudero, Multiple intelligences in a MultiAgent System applied to Telecontrol, Expert Systems With Applications, Elsevier, ISSN: 0957-4174, Volume 41, Issue 15, Pages 6688-6700, 2014. JCR=1,85, T1

13. Carrasco, M.D. Hernández, **M.C. Romero-Ternero**, F. Sivianes, D. Oviedo, J.I. Escudero, PeMMAS: A Tool for Studying the Performance of Multi-Agent Systems Developed in JADE , IEEE Transactions on Human-Machine Systems, ISSN: 2168-2291, Volume: 44 , Issue: 1 Page(s): 180 - 189, 2014. JCR=2,55, T1

14. Iñigo-Blasco, P, Diaz-del-Rio, F., **Romero-Ternero, MC**, Cagigas-Muñiz, D., Vicente- Diaz, S (2012). Robotics Software Frameworks for Multi-Agent Robotic Systems Development, Robotics and Autonomous Systems, Elsevier, Volume 60, Issue 6, June 2012, Pages 803–821, ISSN: 0921-8890, publicado online en SciVerse ScienceDirect, DOI: http://dx.doi.org/10.1016/j.robot.2012.02.004. JCR=1,16, Q2, 127 cites

15. Carrasco, A, **Romero-Ternero**, **M.C.,** Sivianes, F, Hernandez, MD, Escudero, JI (2010). Multi-Agent and Embedded System Technologies Applied to Improve the Management of Power Systems , JDCTA: International Journal of Digital Content Technology and its Applications, Vol. 4, No. 1, pp. 79 ~ 85, 2010. SJR (SCImago)=3,645, Q2, 25 cites

Congress

16. Saeideh Memarian, Andreea M. Oprescu, Betsaida Alexandre-Barajas, Gloria Miró-Amarante, M. Carmen Romero-Ternero (2024). KMFC-GWO: A Hybrid Fuzzy-Metaheuristic Algorithm for Privacy Preserving in Graph-based Social Networks, IX Jornadas Nacionales de Investigacion en Ciberserguridad, 27-29 mayo, Sevilla

17. Seyedeh Somayeh Fateminasab, Saeideh Memarian, Seyed Reza Kamel Tabbakh, MCarmen Romero-Ternero (2024). A Review on Open Data Storage and Retrieval Techniques in Blockchain-based Applications, IEEE 10th International Conference in Web Research, 24-25 abril, Irán

18. M.C. Romero-Ternero, M. Lima-Serrano (2023). El impacto de la transformación digital en los servicios sociales y sanitarios, I Jornada Internacional sobre Experiencias e Iniciativas en Innovación Social: "Ideas para el cambio", Fundación SAMU, 23-25 febrero, Sevilla

19. A.M. Oprescu, J. Cordero, J.L. Romero, JL González, **M.C. Romero-Ternero**, M.A. Armengol (2023). Estrategia de validación de un sistema de soporte a la decisión clínica basado en inteligencia artificial para la predicción de mortalidad a medio plazo en pacientes hospitalizados por covid, Jornadas Andaluzas de Bioinformática (JABI 2023)

20. A.M. Oprescu, G. Miró-Amarante, L. García-Díaz, V.E. Rey, A. Chimenea-Toscano, R. Martínez-Martínez, **M.C. Romero-Ternero** (2022). A review of Towards a data collection methodology for Responsible Artificial Intelligence in health: A prospective and qualitative study in pregnancy, VII Jornadas Nacionales de Investigación en Ciberseguridad, 27-29 june, Bilbao (Spain).

21. J. Mora-Merchán, **M.C. Romero-Ternero**, A.M. Oprescu, M.A. Rebollo (2021). Contribuciones de la computación afectiva al abordaje de los problemas de acoso entre escolares. Avances y retos, X CONGRESO INTERNACIONAL DE PSICOLOGÍA Y EDUCACIÓN De la Red Neuronal a la Red Social: Bienestar y Convivencia, Córdoba, 18 junio, 2021.

22. Guerrero, J.I., **Romero-Ternero, M.C.**, Personal, E., Larios Marín, D.F., Guerra, J.A., Leon, C. (2020). Emotional Factor Forecasting based on Driver Modelling in Electric Vehicle Fleets, 22nd International Conference on Enterprise Information Systems, Online Streaming, 8 Mayo.

23. **Romero-Ternero, MC**, García-Robles, R, Cagigas-Muñiz, D, Rivera-Romero, O (2017). A Mobile App to Manage Children Dental Anxiety: Context and Approach, 9th International Conference on e-Health 2017, Lisbon (Portugal), July 20 to 22, 2017.

24. Álvarez-Benito, G, Cagigas Muñiz, D, García Robles, R, Rivera, O, **Romero-Ternero, MC** (2014). Software Predictivo de Apoyo a la Comunicación para Niños Oncológicos con Disfunción del Lenguaje, Actas del VII Congreso Internacional y XII Nacional de Psicología Clínica, Nº. 43 CE-255, Sevilla (España), 14-16 noviembre 2014.

25. Oviedo, D, **Romero-Ternero, MC**, Carrasco, A, Sivianes, F, Hernandez, MD, Escudero, JI (2013). Simulation and Implementation of a Neural Network in a Multiagent System, Proceedings of the 8th International Conference on Intelligent Systems and Knowledge Engineering, Vol 3: Practical Applications of Intelligent Systems, ISBN 978-3-642-54926- 7, ShenZhen (China), 20-22 noviembre 2013.

C.2. PHD-Thesis

26. Inferencia en sistemas multiagente. David Oviedo Olmedo. 18/07/2013. Directora.

27. Interacciones entre agentes inteligentes en sistemas distribuidos. Mª Dolores Hernández Velázquez. 12/04/2013. Directora.

28. Sistema asistencial inteligente basado en tecnologías IoT para la mejora de la movilidad de peatones con discapacidad visual en ciudades inteligentes. Aleksandro Montahna. 24/10/2023. Directora.

29. Metodologías y técnicas para el análisis de datos y el diseño y desarrollo de soluciones de Inteligencia Artificial Confiable basadas en modelos predictivos en el ámbito de la salud. Andreea M. Oprescu. 07/11/2023. Directora.

C3. Others

30. Romero Ternero, MC (2020). Modelos Emocionales para la Toma de Decisiones en Arquitecturas Cognitivo-Afectivas Basadas en Sistemas Multiagente, TFM, Máster Propio en Ciencias Cognitivas de la Universidad de Málaga, 30 octubre. http://t.ly/SIC2

31. Martínez, R., Barro, S., Orozco, G., Romero-Ternero, M.C. (coord..) (2020). IA y Desarrollo Humano. Propuesta ciudadana para la Comisión de Reconstrucción Social y Económica, Cátedra Microsoft-UV Privacidad y Transformación Digital, http://t.ly/SIC2

Part D. List of Projects Full list available at http://personal.us.es/mcromerot
D.1. Research projects

32. ARTIFACTS: generAtion of Reliable syntheTIc health data for Federated leArning in seCure daTa Spaces – USE. Ministerio de Ciencia e Innovación, Generación de Conocimiento 2022. PI. Provisional resolution.

33. DAPHNE: Deep-learning Analysis and cyber-PHysical systems applied to biodiversity in urban and Natural Environments (P20_01078). Consejería de Economía, Conocimiento, Empresas y Universidad, Junta Andalucía. 05-10-2020/30-04-2023. 189.000€.

34. Prevention of Gender Violence in Adolescence through Physical Exercise and Sports: An Intervention Based on Self-Determination Theory (US- 1264911). Consejería de Economía y Conocimiento, Junta de Andalucía. 01-02-2020/30-04-2022. 55.000€.

35. Training Activities to Implement the Data Protection Reform. (TATODPR) (H2020- 769191). Comisión Europea. 1-11-2017/31-10-2019. 54.029€.

36. CARISMA: Remote Automatic Control of Solar Installations with Multi-agent technology. Junta de Andalucía (FEDER - FSE). P08-TIC-3862. 31-01-2009/31-01-2013. 187.583,68€.

37. Wireless Multimodal Interface 8-TIC-03631. Junta de Andalucía - Consejería de Innovación, Ciencia y Empresas. From 31/01/2009 to 31/01/2013. 167.623,68 €.

D.2. Contracts, technological or transfer merits

38. ARCADE: App for Reducing Children's Anxiety in Dentistry Environment. Cátedra Telefónica Inteligencia en la Red. 01-02-2017 / 01-02-2018. IP: MC Romero Ternero. 3000€.

39. DAILYMPICS CP: Feasibility study of a Mobile Digital Coaching Program on Physical Activity and Sport to support and educate prostate cancer patients about healthy living, S.L. P081-16/E03. Investigador. 01-02-2016/28-02-2017. IP: O. Rivera Romero. 20.000€.

40. TECNOCAI: Efficient and intelligent technologies aimed at health and comfort in indoor environments. Ministerio de Ciencia e Innovación. P054-09/E16. 01-01-2010 / 31-12-2011. IP: Isabel Gómez González. 92.800€.

41. Virtual classroom based on computational intelligence. Contrato de investigación a través de la FIDETIA. Desde: 01/01/2010 Hasta: 31/12/2011. IP: Carlos León. 56.260€.

D.3. Patents

42. Romero-Ternero, MC; Oprescu, A.M.; Peralta-Álvarez, Mª Estela; Quintela Vela, F.J..; Ruiz-Martínez, I. WISEApp: Sistema para el Seguimiento Médico del Embarazo a través de Aplicación Móvil, Software registration SE-154-22, Registering date: 21/03/2022.

43. Romero Ternero, MC, Díaz Ruiz, S. Sistema y método de resolución centralizada y confiable de direcciones de red en direcciones físicas no vulnerable a ataques de envenenamiento de caché, Patente número P200901708, December 2012.