



CURRICULUM VITAE

Dr. FELIPE ESPINOSA ZAPATA

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Current Situation

- Full Professor. Department of Electronics. University of Alcalá (2016-present).
- Academic Secretary. Institute of Latin American Studies (IELAT), University of Alcalá.
- Academic Coordinator of the Master's Degree in Electronic Engineering (M202)
- Five six-year research periods awarded by the National Commission for the Evaluation of Research Activity. Last period 2018-2023.
- One six-year research period granted by the National Commission for the Evaluation of Knowledge Transfer and Innovation Activity period 1999-2008.

Academic Experience

- Telecommunications Technical Engineer. EUIT Telecommunications. CEI Alcalá de Henares (center attached to the Polytechnic University of Madrid). 1984.
- Telecommunications Engineer. Polytechnic University of Madrid. 1992.
- PhD in Telecommunication Engineering. University of Alcalá. 1998.
- Lecturer. Professional Technical Subjects. EUIT Telecommunication. CEI Alcalá de Henares. 1986.
- Lecturer. Electronic Technology Area. Engineering School. UAH. 1988.
- Professor. Electronic Technology Area. Engineering School. UAH. 2000-2016.
- Director of the Research Center: High Technology and Homologation Center. UAH. 1999-2010. ENAC 574/LE1083 and 173/LC423 accreditations.
- Director. Cuadrecil Chair of Electronic Control. 2008-2011.
- Advisor to the General Directorate of Universities and Research of the Community of Madrid. 2007-2011.
- Editorial Board Member. Journal of Applied Soft Computing (Q1 JCR). 2014-2022.
- Editorial Board Member. Multidisciplinary Digital Publishing Institute (MDPI). Sensors Special Issue: Mobile Robot Navigation. ISSN:1424-8220. October 2018.
- IEEE Senior Member. Since 2015.

Awards

- 3M Foundation Award for Innovation 2009. Environment Category: "Electronic system for measuring and monitoring the effects of real traffic on pollutant emissions". Alcalá de Henares, 21-October-2009. Mention in Europa Press Newspaper (21-10-2009).

Publications (last 10 years)

- 2016 C. Losada, F. Espinosa, C. Santos, M. Gálvez, E. J. Bueno, M. Marrón, and F. J. Rodríguez. "An Experience of CACSD for Networked Control Systems: From Mechatronic Platform. Identification to Control Implementation" IEEE Transactions on Education. Issue 99, pages 1-8, Doi: 10.1109/TE.2016.2550586
- 2017 Espinosa, F., Hernández, A., Mazo, M., Ureña, J., Pérez, M.C., Jiménez, J.A., Fernández, I. García, J.C. and García, J.J. "Detector of Electrical Discontinuity of Rails in Double-Track Railway Lines: Electronic System and Measurement Methodology". IEEE Transactions on Intelligent Transportation Systems. Vol 18, Issue 4, pages 743-755, Doi: 10.1109/TITS.2016.2586538
- 2017 Martínez-Rey, M., Espinosa, F., Gardel, A. "Analysis of the optimal sampling rate for state estimation in sensor networks with delays". ISA Transactions. ISATRA2445. Doi: 10.1016/j.isatra.2017.03.007.
- 2017 C. Santos, M. Martínez-Rey, F. Espinosa, A. Gardel and E. Santiso. "Event-based sensing and control for remote robot guidance: an experimental case". Sensors-Basel 2017, 17(9), 2034. Doi: 10.3390/s17092034
- 2018 Santos, C., Echevarria, J., Espinosa, F., Marron, M., Losada, C and Pizarro, D. "Digital implementation of a self-triggered control approach for a mechatronic platform: experimental results" International Journal of Intelligent Machines and Robotics. IJIMR-172082. Vol 1, nº 1. DOI: 10.1504/IJIMR.2018.090945
2018. F. Espinosa, J. J. García, A. Hernández, M. Mazo, J. Ureña, J. A. Jiménez, I. Fernández, C. Pérez, J.C. García. "Advanced monitoring of rail breakage in double-track railway lines by means of PCA techniques" Applied Soft Computing. Vol 63, pag 1-13, Doi: 10.1016/j.asoc.2017.11.009
- 2018 F. Espinosa, J.L. Lázaro, J. Olivares and rest of ALCOR Project's researchers. "Proyecto ALCOR: Contribuciones a la Optimización del Guiado Remoto de Robots en Espacios Inteligentes". Revista Iberoamericana de Automática e Informática Industrial. RIAI Vol 15, n 4, 416-426. Doi: 10.4995/riai.2018.9199
- 2018 M.C. Pérez-Rubio, C. Losada-Gutiérrez, F. Espinosa, J. Macías-Guarasa, J. Tiemannb, F. Eckermannb, C. Wietfeldb, M. Katkovc, S. Hubac, J. Ureña, J. M. Villadangos, D. Gualda, E. Díaz, R. Nieto, E. Santiso, P. del Portillo, M. Martínez. "A Realistic Evaluation of Indoor Robot Position Tracking Systems: The IPIN 2016 Competition Experience". Measurement (ISSN: 0263-2241). Doi: <https://doi.org/10.1016/j.measurement.2018.11.018>
- 2019 A. de la Llana, J.L. Lázaro-Galilea, A. Gardel-Vicente, D. Rodríguez-Navarro, I. Bravo-Muñoz, F. Espinosa-Zapata. "Characterization of multipath effects in indoor positioning systems by AoA and PoA based on optical signals". Sensors-Basel 2019, 4.917. Doi:10.3390/s19040917
- 2019 M. Martínez-Rey, C. Santos, R. Nieto, C. Losada, F. Espinosa. "On-line evaluation of the process noise covariance matrix for event-based state estimators" International Journal for Numerical Methods in Engineering. Art ID:NME6131. Doi: 10.1002/nme.6131
- 2019 C. Santos, F. Espinosa, M. Martínez-Rey, D. Gualda, C. Losada. "Self-triggered formation control of nonholonomic robots" Sensors-Basel 2019, 19, Doi: 10.3390/s19122689
- 2019 Carlos Santos, José A. Jiménez, Felipe Espinosa. "Effect of event-based sensing on IoT node power efficiency. Case study: air quality monitoring in smart cities". IEEE Access. ISSN: 2169-3536. Vol 7. Issue 1. Pp 132577-132586. Doi: 10.1109/ACCESS.2019.2941371

- 2019 Investigadores de la Red de Posicionamiento y Navegación en Interiores REPIN. Grupo GEINTRA. "Libro Blanco sobre Espacios Inteligentes y Tecnologías de Posicionamiento y Navegación en Entornos de Interior". Libro ISBN: 978-84-17729-47-9. Pag. 1-177. Editorial: Servicio de Publicaciones. Universidad de Alcalá.
- 2020 Carlos Santos, Felipe Espinosa, Enrique Santiso and David Gualda "Lyapunov Self-triggered Controller for Nonlinear Trajectory Tracking of Unicycle-type Robot". International Journal of Control, Automation and Systems. ISSN: 2005-4092. Doi: 10.1007/s12555-018-0576-x
- 2020 C. Losada-Gutiérrez, F. Espinosa, C. Santos-Pérez, M. Marrón-Romera and J.M. Rodríguez-Ascariz. "Remote control of a robotic unit: a case study for control engineering formation" IEEE Transactions on Education. ISSN: 0018-9359. Doi: 10.1109/TE.2020.2975937
- 2021 Felipe Espinosa, Carlos Santos, Jesús E. Sierra. "Transporte multi-AGV de una carga: estado del arte y propuesta centralizada". Revista Iberoamericana de Automática e Informática Industrial. Vol.18, nº1, 2021. Doi: <https://doi.org/10.4995/riai.2020.12846>
- 2022 F. Espinosa, A.B. Bartolomé, P. Villoria and M.C. Rodríguez-Sánchez. "Contribution of singular spectral analysis to forecasting and anomalies detection of indoors air quality". Sensors-Basel 2022, 22, 3045. Doi: <https://doi.org/10.3390/s22083054>
- 2023 C. Losada, J.M. Rodríguez and F. Espinosa. "How to select the electronic target for robot trajectory tracking Lyapunov-based controllers: comparative study and experimental results". Electronics Letters. ELL212937. September 2023. DOI: 10.1049/ell2.12937

International Conferences (last 10 years)

- 2016 M Martínez-Rey, F Espinosa, A Gardel, C Santos and E Santiso. "Mobile robot guidance using adaptive event-based pose estimation and camera sensor" EBCCSP-2016 Second International Conference on Event-Based Control, Communication and Signal Processing. IEEE Conference Publications. DOI: 10.1109/EBCCSP.2016.7605089. Krakow, 13-15 June, 2016.
2016. A. Gardel, F Espinosa, R Nieto, J.L. Lázaro and I. Bravo. "Wireless camera nodes on a cyber-physical system". IDSC-2016. 10th Int. Conf. on Distributed Smart Camera. ACM New York, NY, USA ©2016. ISBN: 978-1-4503-4786-0. Vol 1, pp 1-6. Doi: 10.1145/2967413.2967423. Paris, France. 12-15 September, 2016
- 2016 M Martínez-Rey, E Santiso, F Espinosa, R Nieto and A Gardel. "Smart laser scanner for event-based state estimation applied to indoor positioning" IPIN-2016 Seventh Int. Conf. on Indoor Positioning and Indoor Navigation. IEEE Conference Publications. DOI: 10.1109/IPIN.2016.7743613. Alcalá de Henares, 4-7 October, 2016.
- 2017 C. Santos, F. Espinosa, E Santiso, M. Martínez-Rey. "A simplified event-triggering condition non-dependent on measurement error" EBCCSP-2017 Third International Conference on Event-Based Control, Communication and Signal Processing. IEEE Conference Publications. Doi: 10.1109/EBCCSP.2017.8022823. Madeira, 24-26 May, 2017.
- 2018 Rodríguez, D. Lázaro, J.L. Espinosa, F. de la Llana, A. Santos, C. "Simplified calibration process for a PSD-based optical (IPS)" IPIN 2018 International Conference on Indoor Positioning and Navigation (IPIN). IEEE Conference Publications. Doi: 10.1109/IPIN.2018.8533732. Nantes, 22-27 September 2018.

- 2022 Aparicio-Esteve, E., Moltó, D., Ureña, J., Hernández, A. and Espinosa, F. “Dynamic adjustment of measurement noise covariance matrix in an infrared-based positioning and tracking system”. 12th Int. Conf. on Indoor Positioning and Navigation (IPIN 2022). DOI: 10.1109/IPIN54987.2022.9917511. Beijing, 05-07 September 2022.
- 2024 Marta Marrón-Romera, Cristina Losada-Gutiérrez, Daniel Pizarro, Felipe Espinosa, David Fuentes-Jiménez, José M. Villadangos, Carlos Cruz, Carolina Toledano-Monge. “Ruby: The sensor module in the GEMS Erasmus+Project” XVI Congreso de Tecnología, Aprendizaje y Enseñanza de la Electrónica (TAEE). DOI: 10.1109/TAEE59541.2024.10604886. Malaga, Spain. 26-28 June 2024.
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Research Contracts (10 últimos años)

- 2016 “Mejoras en la automatización integrada para una cortadora de papel industrial CORPA II”. Ref: UAH 28/2016. Empresa financiadora: Manipulados Alcalá SL. Investigador principal: Felipe Espinosa Zapata. Número de investigadores participantes: 2.
- 2017 “OVECAL: Sistema de análisis de QoE en flujos de vídeo DVB”. Ref: UAH 95/2016. Empresa financiadora: Servicios Audiovisuales Overon SL. Investigador principal: Felipe Espinosa Zapata. Número de investigadores participantes: 3
- 2019 “Algoritmos de guiado cooperativo para transporte de cargas en entornos industriales”. Ref: UAH-82/2019. Empresa financiadora: ASTI Mobile Robotics. Investigador principal: Felipe Espinosa Zapata. Número de investigadores participantes: 2.
- 2022 “ENYTRACC: Sistema de detección y supervisión de ocupación de vía” Ref: UAH 59/2021. Empresa financiadora: Enclavamientos y señalización ferroviaria -ENYSE SAU-. Investigador principal: Felipe Espinosa Zapata. Número de investigadores participantes: 8
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Others

- Supervisor of 7 PhD (doctoral theses), International Doctorate Mention 4 of them.
- Student Branch Counselor of The Institute of Electrical and Electronics Engineers, Inc. in the University of Alcalá. 2003
- Recognition of 8 five-year periods of university teaching dedication 1985-2025.
- Stays in foreign centers: Universidad de Oriente, Santiago de Cuba, Cuba (1997, 1999, 2000). Université Blaise Pascal, Clermont Ferrand, France (2000). Intelligent System Research Centre, University of Ulster, Derry, Northern Ireland (2011). University College Cork, Cork, Ireland (2014). PUCMM, Santo Domingo, Dominican Republic (2020).
- Research leader of 18 research projects funded by public entities.
- Participation in more than 40 privately funded research contracts, 24 of them as research leader or co-leader.
- Co-author of 8 national patents and 1 international patent.