Professor **I. Felician CAMPEAN**

Academic Qualifications

PhD	Reliability of Mechanical Systems	Brunel University	April 1998
Dipl Eng	Mechanical / Manufacturing Engineering Romania (5 years Degree Course)	Transilvania University Brasov, 1985 – 1990	

Employment History

University of Bradford, Faculty of Engineering & Informatics   Oct 1998 - Present

  Professor of Automotive Reliability Engineering   Nov 2011 - Present

  Senior Lecturer in Competitive Design   May 2005 – Nov 2011

  Senior Research Fellow in Reliability & Quality Engineering   May 2000 – May 2005

  Research Fellow in Reliability & Quality Engineering   Oct 1998 – May 2000

Transilvania University Brasov, Romania   Mar 1992 – Oct 1998

  Faculty of Manufacturing Engineering

  Lecturer in Manufacturing & Automation   Mar 1994 – Sept 1998

  Assistant Professor   Mar 1992 – Feb 1994

URB SA, Brasov, Romania   Sept 1990 – Mar 1992

  Production engineer – Bearings manufacturing

  Grinding and superfinishing specialist – tooling and metrology

Academic and Lecturing

I have extensive experience of developing learning material and teaching undergraduate, postgraduate and post-experience / workplace-based students, supervision of final year and Masters' dissertations, contribution to curriculum and course development at all levels (undergraduate and postgraduate / post-experience), professional accreditation of courses, and external examining of taught provision.

Academic leadership I have led the development and the operations of several innovative postgraduate courses in partnership with industry – by blending academic and workplace based learning and research, in partnership with global automotive industry (Ford, Jaguar Land Rover).

Research and Knowledge Transfer

Over the past 20 years I have developed a strong track record of R&KT leadership, most prominently underpinned by collaborative research with industry. This includes major global companies such as Jaguar Land Rover, Ford Motor Company, Airbus, Renault, Stellantis, Valeo, Tata Motors, Honda, Webasto, Mercedes Grand Prix Ltd and BAE Systems.

I have initiated and managed major collaborative research projects funded directly by industry or Research Councils (TSB, Innovate-UK, APC and EPSRC) – cumulative total grant funding of over £25m; initiated and led significant knowledge transfer activities with industrial collaborators, including major programmes of professional development through research-led short courses, and postgraduate progression based on workplace based KT and R; supervised many industry based research projects leading to MPhil and PhD awards; acted as expert / provided consultancy to several major corporations – including international missions.

My major research interests revolve around the modelling of complex systems to improve reliability, robustness and resilience. This includes development of systems modelling methods and methodologies for risk and failure mode avoidance early in Product Development, multi-physics modelling and multi-disciplinary design optimisation for complex systems, and knowledge-enabled machine learning for systems healthcare and resilience.

Research Leadership roles:

Associate Dean Research & Knowledge Transfer	Jan 2017 - present
Director of the Automotive Research Centre	July 2012 – present
Co-Director of the Advanced Automotive Analytics Institute	July 2016 - present
Director of the Bradford Engineering Quality Improvement Centre	May 2000 - present

Research grants, projects and contracts (funded projects)

1. NextGenDrive, Innovate UK / Advanced Propulsion Centre project (consortium led by Arrival), 2021-2023.
2. aiR-Force Artificial Intelligence for Reliability-based Feature Optimisation with Driving Contextual Intelligence, Proof of Concept project funded by the Institute of Digital Engineering and Jaguar LandRover, 2020-21 (PI).
3. SAFI Project, funded by the SAFI Consortium (Airbus, Renault, PSA, Valeo), 2018-21 [PI]
4. Modelling and Optimisation of Manufacturing Processes of Turbochargers, Innovate UK and Borg Warner (KTP), 2018 - 2020 (CI).
5. Modelling and Analysis of Cyber-Physical Systems, Romanian Ministry of Research & Innovation, hosted by the Research Institute of University of Bucharest (PI Prof Florentin Ipate), 2017 – 2019.
6. inPowerCare: Intelligent Personalised Powertrain Health Care, Jaguar Land Rover, 2016-2020. [PI]
7. Engineering and Process Excellence Programme, JLR, 2012-2019. [PI]
8. Multi-Physics Engine Simulation Framework (Research into Advanced CAE Capability for Multi-Physics Simulation Framework to Generate High Fidelity Prediction of Engine Out Emissions), Jaguar Land Rover, 2015-2018 [PI]
9. Sequential DoE and Multidisciplinary Optimisation Tools for Engine Experiments, Jaguar LandRover, 2016. [PI]
10. Systems Engineering Design Excellence through Failure Mode Avoidance, Jaguar LandRover, 2014-17. [PI].
11. Engine Calibration Optimisation Using Multidisciplinary Design optimisation for Low carbon Vehicles, EPSRC CASE Studentship with Jaguar LandRover, 2011–16. [PI]
12. Reliability Improvement of F1 Race Car, Mercedes Benz GP Ltd, 2013-14. [PI]
13. CO2 Reduction through Emission Optimisation, TSB project with Ford, Jaguar Land Rover, and a consortium of 6 other companies and Universities (£9m total), 2010–13.
14. Right First Time Through Design, Ford Motor Company, 2011-13 [PI]
15. Manufacturing Failure Mode Avoidance Strategy - Development & Implementation, KTP with BAE Systems, 2010–13. [PI]
16. Manufacturing Process Control and Capability Improvement of Complex Aircraft Manufacturing Operations, KTP with BAE Systems, 2010 – 2013 [CI].
17. Advanced Maintenance Strategies for Complex Aircraft Manufacturing Operations, KTP with BAE Systems, 2010 – 2013 [CI].
18. Advanced Braking System Design for Full Electric Vehicles, KTP with TMETC (Tata Motors European Technical Centre), 2009-11; [CI].
19. Application of Advanced Mathematical Techniques to Fuel Economy and Emissions Optimisation, 2007 - 2010, funded by Jaguar Land Rover
20. Development of a Novel Camshaft Drive System by using Aligned Polymers, 2008-2011, funded by Gates Corp [CI].
21. Next Generation Cam Drives, Technology Innovation research funded by Gates Corp. Research consortium included Gates, UoB and Innovia Technology Ltd. 2006, 14k [CI]
22. Implementation of a Quality Management System and Lean Operation at a Small Manufacturing Company, KTP award with Stylex Auto Ltd, 2005 – 2007 [PI].
23. Acceleration Pedal Ergonomic Data Measurement System, 2004 – 2007, funded by Jaguar LandRover; [PI];

24. Modelling Customer Satisfaction data with Performace, Economy and Driveability, 2005 – 2006, funded by Jaguar Cars; [PI]
25. Testing and Evaluation of Butane Working Capacity, Visteon UK, 2004, [PI].
26. Reliability and Robustness Improvement of In-tank Fuel Delivery System for N/A and S/C Petrol Engines, 2002 – 2004, funded by Jaguar Cars; [PI]
27. Fuel Filler Door Functional Degradation Investigation; 2003; funded by Ford Design Institute Dearborn, US; [PI].
28. Customer Correlated Life Prediction Modelling for Improved Design Verification of Automotive Components; EPSRC GR/N06021, with Jaguar Cars, 2000-04; [PI]

Research supervision:

PhD Completions: 14
MPhil completions: 21
MRes / 120 credits MSc Dissertations completions: 13
Research staff supervision: 15
PhD External Examiner: 6 (Liverpool; Bath; Open University, Bristol, Hudersfield).

International Engagement and Scholarship

I have maintained a strong network of academic and industrial collaborations across the UK, Europe, USA and China. Active engagement with the Design Society (serving as Steering Committee member for the Design Process SIG) and the Royal Statistical Society. Served as international expert for the Austrian Competence Centre Programme COMET – the K2-Centre Digital Mobility (2017 & 2021), Sierra Hunter Programme, Politecnico di Torino & FCA, Ford Design Institute. Invited keynote speaker for international events, served as scientific programme committee member / chair for international conferences (organised / chaired over 25 conference events), reviewer for over 30 journals.

Publications in the last 5 years
1. Soleimani, M., Campean, F., Neagu, D., Doikin, A. (2021) Integration of Hidden Markov Modelling and Bayesian Network for Fault Detection and Prediction of Complex Engineered Systems, Reliability Engineering & System Safety, 10.1016/j.ress.2021.107808.
2. Pant, G., Campean., F., Neagu, D., Korsunovs, A., Afonso Garcia, O., (2021) Hybrid Dynamic Modelling of Engine Emissions on Multi-Physics Simulation Platform, SAE International Journal of Engines 14(2) doi:10.4271/03-14-02-0017.
3. Yildirim, U., Campean, F. Functional modelling of complex multi-disciplinary systems using the enhanced sequence diagram. Res Eng Design (2020). https://doi.org/10.1007/s00163-020-00343-8
4. Gericke, K., Eckert, C., Campean, F., Clarkson, P.J., Flening, E., Isaksson, O., Kipouros, T., Kokkolaras, M., Köhler, C., Panarotto, M., Wilmsen, M., (2020) Supporting designers: Moving from method menagerie to method eco system, Design Science 6:e21, https://doi.org/10.1017/dsj.2020.21
5. Doikin, A., Campean, F., Neagu, D., Priest, M., Soliemani, M. (2020) Knowledge-Enabled Machine Learning for Predictive Diagnostics: A Case Study for an Automotive Diesel Particulate Filter, Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference, Eds Baraldi P, Di Maio, F and Zio, E., Research Publishing, 2809-2816, doi: doi:10.3850/978-981-14-8593-0
6. Soleimani, M., Campean, F., Neagu, D., Doikin, A., (2020) Integration of Hidden Markov Modeling and Bayesian Network for Fault Detection and Fault Prediction: an Automotive Case Study, Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference, Eds Baraldi P, Di Maio, F and Zio, E., Research Publishing, 2311-2318, doi:10.3850/978-981-14-8593-0.
7. Cooke, K.O., Fannon, S., Campean, F., (2020) Development of an Innovative Integrated Curriculum for Process Improvements in a Product Development Organisation, Proc Latin American and Caribbean Consortium of Engineering Institutions (LACCEI), July 2020.
8. Campean, F., Delaux, D., Sharma, S., & Bridges, J. (2020). Reliability Research Roadmapping Workshop: Implications for Engineering Design. Proceedings of the Design Society: DESIGN Conference, 1, 2465-2474. doi:10.1017/dsd.2020.337

9. Pant G., Campean F., Korsunovs A., Neagu D., Garcia-Afonso O. (2020) Co-modelling Strategy for Development of Airpath Metamodel on Multi-physics Simulation Platform. In: Ju Z., Yang L., Yang C., Gegov A., Zhou D. (eds) Advances in Computational Intelligence Systems. UKCI 2019. Advances in Intelligent Systems and Computing, vol 1043. Springer, Cham. https://doi.org/10.1007/978-3-030-29933-0_42

10. Torgunov D., Trundle P., Campean F., Neagu D., Sherratt A. (2020) Vehicle Warranty Claim Prediction from Diagnostic Data Using Classification. In: Ju Z., Yang L., Yang C., Gegov A., Zhou D. (eds) Advances in Computational Intelligence Systems. UKCI 2019. Advances in Intelligent Systems and Computing, vol 1043. Springer, Cham. https://doi.org/10.1007/978-3-030-29933-0_40

11. Micic N., Lei C., Neagu D., Campean F. (2020) Queries on Synthetic Images for Large Multivariate Engineering Data Base Searches. In: Ju Z., Yang L., Yang C., Gegov A., Zhou D. (eds) Advances in Computational Intelligence Systems. UKCI 2019. Advances in Intelligent Systems and Computing, vol 1043. Springer, Cham. https://doi.org/10.1007/978-3-030-29933-0_43

12. Hussain, A.; Munive-Hernandez, J.E; Campean, F. (2020); Lean Approach in a High Mix - Low Volume Manufacturing Environment: a Case Study, Proceedings of the International Conference on Industrial Engineering and Operations Management, 10th International IEOM Conference, Dubai, UAE, ISSN: 2169-8767 ISBN: 978-1-5323-5952-1

13. Kianifar, M., Campean, F., (2019) Performance evaluation of metamodelling methods for engineering problems: towards a practitioner guide, Structural and Multidisciplinary Optimisation, DOI: 10.1007/s00158-019-02352-1.

14. Korsunovs A, Campean F, Pant G, Garcia-Afonso, O., Tunc, E. (2019) Evaluation of 0D stochastic reactor modelling for a diesel engine application. International Journal of Engine Research, DOI: 10.1177/1468087419845823.

15. Ullah, Z., Mokryani, G., Campean, F., Hu, Y.F., (2019) A Comprehensive Review of Virtual Power Plants Planning, Operation and Scheduling Considering the Uncertainties Related to Renewable Energy Sources, IET Energy Systems Integration, DOI: 10.1049/iet-esi.2018.0041.

16. Campean, F., Neagu, D., Doikin, A., Soleimani, M., Byrne, T. (2019) Automotive IVHM: Towards Intelligent Personalised Systems Healthcare, in Proceedings of the 22nd International Conference on Engineering Design (ICED19), Delft, The Netherlands, 5-8 August 2019. DOI:10.1017/dsi.2019.90.

17. Kianifar, M.R., Campean, F. (2019) Global optimisation of the car front-end geometry to minimise pedestrian head injury levels, in Proceedings of the 22nd International Conference on Engineering Design (ICED19), Delft, The Netherlands, 5-8 August 2019. DOI:10.1017/dsi.2019.294.

18. Byrne, T.J., Doikin, A., Campean, F., Neagu, D., (2019) An Axiomatic Categorisation Framework for the Dynamic Alignment of Disparate Functions in Cyber-Physical Systems, in Proceedings of the 22nd International Conference on Engineering Design (ICED19), Delft, The Netherlands, 5-8 August 2019. DOI:10.1017/dsi.2019.365.

19. Doikin A, Habib Zadeh E, Campean F, Priest, M., Brown, A., Sherratt, A., (2018) Impact of duty cycle on wear progression in variable-displacement vane oil pumps. Procedia Manufacturing 16: 115-122, 7th International Conference on Through-life Engineering Services, DOI 10.1016/j.promfg.2018.10.170.

20. Soleimani M, Campean F and Neagu D (2018) Reliability challenges for automotive aftertreatment systems: a state-of-the-art perspective. Procedia Manufacturing, 16: 75-82. 7th International Conference on Through-life Engineering Services, DOI 10.1016/j.promfg.2018.10.174.

21. Hussain A, Munive-Hernandez JE and Campean IF (2019) Developing a Discrete Event Simulation Methodology to support a Six Sigma Approach. Proceedings of the 3rd European International Conference on Industrial Engineering and Operations Management IEOM, July 23-26, Pilsen, Czech Republic.

22. Murphy O, Habib Zadeh E, Campean F and Neagu D (2018) [Proceedings of the] 2018 IEEE 20th International Conference on High Performance Computing and Communications; IEEE 16th International Conference on Smart City; IEEE 4th International Conference on Data Science and Systems. IEEE. ISBN: 978-1-5386-6614-2. pp 1508 - 1515.

23. Predut S, Ipate F, Gheorghe M and Campean IF (2018) Formal Modelling of Cruise Control System Using Event-B and Rodin Platform. [Proceedings of the] 2018 IEEE 20th International Conference on High Performance Computing and Communications; IEEE 16th International Conference on Smart City; IEEE 4th International Conference on Data Science and Systems. IEEE. ISBN: 978-1-5386-6614-2.

24. Micic N, Neagu D, Torgunov D and Campean F (2018) Exploring Methods for Comparing Similarity of Dimensionally Inconsistent Multivariate Numerical Data. [Proceedings of the] 2018 IEEE 20th International Conference on High Performance Computing and Communications; IEEE 16th International Conference on Smart City; IEEE 4th International Conference on Data Science and Systems. IEEE. ISBN: 978-1-5386-6614-2. pp. 1530-1537.

25. Campean F, Yildirim U and Henshall E (2018) Synthesis of functional models from use cases using the system state flow diagram: A nested systems approach.15th International Design Conference (Proceedings) - Design 2018. Dubrovnik, Croatia, 21-24 May 2018, DOI: 10.21278/IDC.2018.0543.

26. Byrne TJ, Campean F and Neagu D (2018) Towards a framework for engineering big data: An automotive systems perspective. 15th International Design Conference (Proceedings) - Design 2018. Dubrovnik, Croatia, 21-24 May 2018, DOI: 10.21278/IDC.2018.0490.

27. Duraiswamy V, Campean F, Harris S and Munive-Hernandez E (2018) Development of a methodology for robust evaluation of perceived quality of vehicle body panel gaps. 15th International Design Conference (Proceedings) - Design 2018. Dubrovnik, Croatia, 21-24 May 2018, DOI: 10.21278/IDC.2018.0432.

28. Yildirim, U., Campean, F, & Williams, H. (2017) Function Modelling using the System State Flow Diagram, Artificial Intelligence in Engineering, Design and Manufacturing, 31(04):413-435, DOI: 10.1017/S0890060417000294 [Gold Open]

29. Lefticaru R, Konur S, Yildirim U, Uddin A, Campean F and Gheorghe M (2017) Towards an Integrated Approach to Verification and Model-Based Testing in System Engineering. In Proc. IEEE International Conference on Cyber, Physical and Social Computing (CPSCom)/ Int Wshop on Engineering Data- & Model-driven Applications (EDMA-2017), June 21-23, 2017, Exeter UK, 131-138, DOI 10.1109/iThings-GreenCom-CPSCom-SmartData.2017.25.

30. Micic N, Neagu D, Campean F and Habib Zadeh E (2017) Towards a Data Quality Framework for Heterogeneous Data. In Proc. IEEE International Conference on Cyber, Physical and Social Computing (CPSCom)/ Int Wshop on Engineering Data- & Model-driven Applications (EDMA-2017), June 21-23, 2017, Exeter UK, 155-162, DOI 10.1109/iThings-GreenCom-CPSCom-SmartData.2017.25.

31. Campean, F, Yildirim, U, 2017, Enhanced Sequence Diagram for Function Modelling of Complex Systems, Procedia CIRP 60 (2017): 273-278, Elsevier, doi: 10.1016/j.procir.2017.01.020.

32. Henshall, E, Campean, F, Rutter, B, 2017, A Systems Approach to the Development of Enhanced Learning for Engineering Systems Design Analysis, Procedia CIRP 60 (2017): 530-535, Elsevier, doi: 10.1016/j.procir.2017.01.020.

33. Uddin, A, Khan, M, Campean, F, Masood, M, 2016, "A framework for complex product architecture analysis using an integrated approach", Concurrent Engineering: Research and Applications, 2016, Vol. 24(3) 195 210, https://doi.org/10.1177/1063293X16647434.

34. Uddin, A, Campean, F, Khan, M. (2016) Application of the Interface Analysis Template for Deriving System Requirements, Proc Int Design Conference "Design 2016", 543-552.

35. Kianifar, M.R., Campean, F., Wood, A.S., (2016) "Application of Permutation Genetic Algorithm for Sequential Model Building - Model Validation Design of Experiments", Soft Computing, Springer, 20:3023-3044, DOI: https://doi.org/10.1007/s00500-015-1929-5.

36. Uddin, A., Campean, F., Khan, M.K., (2015) "Development of an Interface Analysis Template for System Design Analysis", DS 80-4 Proceedings of the 20th International Conference on Engineering Design (ICED 15) Vol 4: Design for X, Design to X, Milan, Italy, 27-30.07.15, pp 111-122.

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