Dr. Marco de Angelis

marco.de-angelis@strath.ac.uk

Education

2012—2015	**PhD**, *Engineering*. University of Liverpool
2008—2011	**Master of Engineering** *cum laude*, University of Rome, Roma Tre.
2005—2008	**Bachelor of Engineering** *cum laude*, University of Rome, Roma Tre.

Employment

Jul 2022 – Present	**Lecturer**, Department of Civil and Environmental Engineering, University of Strathclyde.
May 2020 – Jun 2022	**Senior Research Associate**, EPSRC Programme Grant *digital twins for improved dynamic design*, School of Engineering, University of Liverpool.
Jun 2018 – Apr 2020	**Research Associate**, EPSRC Programme Grant *digital twins for improved dynamic design*, School of Engineering, University of Liverpool.
Feb 2016 – May 2018	**Research Associate & Academic Manager**, Centre for Doctoral Training in Risk and Uncertainty, University of Liverpool.
Jul – Sept 2015	**Research Assistant**, Virtual Engineering Centre. University of Liverpool
Oct 2009 – Jul 2011	**Teaching & Research Assistant**, Laboratory for Modelling and Simulation. University of Rome.

Selected peer-reviewed publications

2023	**Robust online updating of a digital twin with imprecise probability** de Angelis, M., Gray, A., Ferson, S., Patelli, E. *Mechanical Systems and Signal Processing*, vol 186, pp 109877
2023	**Bivariate dependency tracking in interval arithmetic** Gray, A., de Angelis, M., Patelli, E., Ferson, S., *Mechanical Systems and Signal Processing*, vol 186, pp 109771
2023	**Towards an automatic uncertainty compiler** Gray, N., de Angelis, M., Ferson, S. *International Journal of Approximate Reasoning*, vol 160, pp 108951
2022	**Development of a digital twin operational platform using Python Flask** Bonney, M., de Angelis, M., Dal Borgo, M., Andrade, L., Beregi, S., Jamia, N., Wagg, D. *Data-Centric Engineering*, vol 3
2022	**Probability bounds analysis for Python** Gray, N., Ferson, S., de Angelis, M., Gray, A., de Oliveira, F. *Software Impacts*, vol 12, pp 100246
2017	**Forced Monte Carlo simulation strategy for the design of maintenance plans with multiple inspections** de Angelis, M., Patelli, E., Beer, M. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems. Part A, Civil Engineering*, vol 3
2015	**Advanced line sampling for efficient robust reliability analysis** de Angelis, M., Patelli, E., Beer, M. *Structural Safety*, vol 52, pp 170-182

Selected software

2021 **Cristallo**: https://github.com/Digital-Twin-Operational-Platform/Cristallo

2021 **PBA**: https://github.com/Institute-for-Risk-and-Uncertainty/pba-for-python

2020 **Stochastic area metric**: https://github.com/marcodeangelis/stochastic-area-metric

2020 **Intervals**: https://github.com/marcodeangelis/intervals

2014 **OpenCossan**: https://github.com/cossan-working-group/

Invited talks

2023 **Robust online updating of a digital twin with imprecise probability**
EPSRC Programme Grant showcase meeting, University of Swansea.

2020 **Modus tollens: disproving model correctness with parametric certainty**
Institute for Advanced Computational Science, Stoney Brook University

2020 **Digital simulation with uncertain numbers: feeding models with intervals and p-boxes**
Department of Engineering Science, University of Oxford.

2019 **Parametric certainty: can we prove our digital twin wrong with models and data?**
Digital Twin Research Workshop, AMRC Factory, Sheffield.

2016 **Forced Monte Carlo simulation for the design of maintenance schedules**
Mathematical Methods in Reliability, University of Salford.

Service

Since 2020 **Scientific committee:** Society for Imprecise Probabilities, Reliable Engineering Computing.

Apr 2023 **Internal examiner,** PhD thesis: *New insights into the mechanical behaviour of rubber bearings*. University of Strathclyde.

Dec 2018 – Jun 2023 **Managing Guest Editor***, Int. J. Approx. Reason.*

Dec 2020 — Feb 2021 **Co-Host**, *9th SIPTA School on Imprecise Probabilities*. University Liverpool.

Jul 2018 **Co-Chair**, *Eighth International Workshop on Reliable Engineering Computing*. University of Liverpool.

Apr 2017 **Co-Host,** *PhD Spring School*, Risk and Uncertainty, University of Liverpool.

Nov 2017 **External examiner,** PhD thesis: *Incorporating a safety design assessment process model in planning and design system for airports*. University of Birmingham.

Jul 2016 & Mar 2017 **Co-Host**, *First & Second UQM Study Group with Industry*. Institute for Risk and Uncertainty, University of Liverpool.

Nov 2015 **Local committee,** *13th International Probabilistic Workshop*, Institute for Risk and Uncertainty, University of Liverpool.

Jul 2014 **Local committee,** *ICVRAM & ISUMA*, Institute for Risk and Uncertainty, University of Liverpool.

Awards

Jul 2021 **Bronze medal poster award**. ISIPTA 2021. *Department of Computer Science and Artificial Intelligence*, University of Granada.

May 2017 **Teaching and Learning Award**. *Faculty of Science and Engineering*, University of Liverpool.

May 2016 **FFJM Group Prize.** *Fédération Française des Jeux Mathématiques and the Société de Calcul Mathématique*. From the Earth to the Moon.

Aug 2015 **ISIPTA-IJAR Young Researcher Award**. Demonstrated research excellence in imprecise probabilities. *Int. J. Approx. Reason.*

May 2015 **FFJM Group Prize.** *Fédération Française des Jeux Mathématiques and the Société de Calcul Mathématique*. Uncertainty in GPS positioning.

Sept 2011 **Engineering graduate award.** Collegio Ingegneri Ferroviari Italiani.

Teaching

2023—present **Analysis of multi-degree-of-freedom systems.** 10 credits. *Year 4 Civil Engineering GA*. University of Strathclyde.

2023—present **Analysis of indeterminate structures**. 20 credits. *Year 3 Strathclyde + IJEP Civil Engineering UG*, University of Strathclyde.

Research students

Jul 2023 **Jaleena Sunny**, PhD thesis: *Uncertainty characterisation and validation of seismic ground motion models*. University of Liverpool.

Jun 2023 **Alexander Wimbush**, PhD thesis: University of Liverpool.

May 2023 **Nicholas Gray**, PhD thesis: *The importance of risk and uncertainty for humane algorithms*. University of Liverpool.

Dec 2022 **Ander Gray**, PhD thesis: *Correlated uncertainty arithmetic with application to fusion neutronics*. University of Liverpool.

Nov 2022 **Marco Behrendt**, PhD thesis: *Uncertainty modelling in power spectrum estimation of environmental processes*. Leibniz University Hannover.

Sept 2021 **Hector Diego Estrada Lugo**, PhD thesis: *Pseudo credal networks for inference with probability intervals.* University of Liverpool.

Jul 2020 **Jonathan Sadeghi**, PhD thesis: *Uncertainty Modelling for Scarce and Imprecise Data in Engineering Applications.* University of Liverpool.

Research visits

Oct – Nov 2017 **IIT Madras**, Chennai, India. Prof Vallam Sundar.

Sept – Oct 2014 **Columbia University** in the City of New York. Prof George Deodatis.