GIANLUCA FILIPPI

✉ GolfHill Drive 295, Glasgow, UK
☎ +44 7598404485
g.filippi@strath.ac.uk
№ 13/09/1991, Jesolo, Italy

Work Experience

Dec. 2020 – now

Research Associate

Employer: Aerospace Centre of Excellence, University of Strathclyde, Glasgow, Scotland

Project: CAELUS (Care & Equity – Healthcare Logistics UAS Scotland)

Topic: a consortium which brings together 16 partners including the University of Strathclyde, NATS and NHS Scotland. Together we are working to deliver what will be the first national drone network that can transport essential medicines, bloods and other medical supplies throughout Scotland including to remote communities. I am the package leader for network resilience optimisation, uncertainty quantification and digital twin development.

Mentoring Experience

Supervision of teams of undergraduate and postgraduate students of Strathclyde University within many projects related to the design and optimisation of engineering space systems. Examples are IGLUNA 2020 and IGLUNA 2021, founded by a European project from the initiative of ESA-Labs organised by the Switz Space Centre (SSC) that involves the participation of student teams from the whole of Europe with the aim of producing an innovative solution for a future Moon-based habitat.

Education

Sept. 2017 – Dec. 2020

Doctor of Philosophy

Employer: Aerospace Centre of Excellence, University of Strathclyde, Glasgow, Scotland

Project: UTOPIÆ project under the European Marie Sklodowska-Curie action Horizon2020.

Topic: Developing new strategies for the design optimisation of complex engineered systems under epistemic uncertainty.

Advisors: Prof. Massimiliano VASILE and Dr. Annalisa RICCARDI

Oct. 2014 – March 2017

Master Degree (Grade 110/110)

University of Trieste, Italy

Mechanical Engineering

Thesis: 'Fast Belief Estimation with h-decomposition for Evidence-based Preliminary Design of a Spacecraft'

Advisors: Prof. Carlo POLONI and Prof. Massimiliano VASILE

Oct. 2010 – March 2014

Bachelor Degree

University of Trieste, Italy

Industrial Engineering

Thesis: 'Passive training for telemanipulation: hardware prototype'

Advisor: Prof. Paolo GALLINA

July 2008

Conservatory Degree

Conservatory 'C. Pollini', Padova, Italy

5th year degree of piano.

Research Experience

Early Stage Research Secondments

September - December 2018 — Jožef Stefan Institute, Ljubljana, Slovenia.
Research on bi-level optimisation and evolutionary algorithms

November 2019 - January 2020 — ESTECO SpA, Trieste, Italy.
Research on Multi-disciplinary Optimisation and its application to the design of a ducted propeller.

Postgraduate Research

September 2016 - July 2017 — University of Strathclyde, Mechanical and Aerospace Department, Glasgow, Scotland
Project: Robust Design Optimisation of Space Missions
funded by the European Space Agency (Innovation Triangle Initiative) with the involvement of University of Strathclyde, ESTECO Spa and SSTL Ltd.

February - July 2015 — University of Trieste, Mechanical Department, Trieste, Italy

Simulation and analysis of vibration signals generated by rolling elements bearing and gear wheels with defects: Maintenance Optimization of a mechanical system through a method capable to predict the failure of a particular component from the vibration signal of all the system.

Fluid dynamics Optimization of a pump. Integration of SolidWorks, Ansys and modeFRONTIER in order to design a centrifugal pump. Furthermore the final design has been produced with a 3D printing and tested in a hydraulic circuit.

Training Experience

September 2017 – now — Workshops, Training and schools organised within UTOPIÆ Research and Training Network.

May 2019 — 'Complex networks: theory, methods, and applications', Como, Italy.

April 2019 — 'First UK Reliability Meeting'. Durham, UK.

January 2018 — 'Engagement workshop: Multi-scale computational models studying resilience of complex systems', ENCORE organiser, Sheffield, UK.

August 2018 — 'SYNERGY Summer School' on efficient multi-objective optimisation. Ljubljana, Slovenia.

September 2015 — 'ANSYS summer school', Pisa, Italy.

Publications

Conference Papers

Filippi G, Vasile M. Inflationary Differential Evolution for Constrained Multi-Objective Optimisation Problems. International Conference on Bio-inspired Optimisation Methods and Their Application BIOMA, Bruxelles: 2020.

Filippi G, Vasile M. Network resilience optimisation of complex systems. International Conference on Uncertainty Quantification and Optimisation UQOP, Bruxelles: 2020.

Gentile L, Filippi G, Minisci E, Bartz-Beielstein T, Vasile M. Preliminary spacecraft design by means of Structured-Chromosome Genetic Algorithms. IEEE Congr. Evol. Comput., Glasogw: 2020.

Filippi G, Gillespie D, Ross Wilson A, Vasile M. A resilience approach to the design of future Moon base power systems. Int. Astronaut. Congr. IAC: 2020.

Gillespie D, Ross Wilson A, Martin D, Mitchell G, Filippi G, Vasile M. Comparative analysis of Solar power satellite systems to support a Moon base. Int. Astronaut. Congr. IAC: 2020.

Filippi G, Vasile M. A Memetic Approach to the Solution of Constrained Min-Max Problems. 2019 IEEE Congr. Evol. Comput. CEC, Wellington: 2019.

Filippi G, Vasile M. A Multi Layer Evidence Network Model for the Design Process of Space Systems under Epistemic Uncertainty. EUROGEN, Guimaraes: 2019.

Filippi G, Vasile M. Evidence-based resilience engineering of dynamic space systems. Proc. Int. Astronaut. Congr. IAC, Washington: 2019.

Greco C, Gentile L, Filippi G, Minisci E, Vasile M, Bartz-Beielstein T. Autonomous Generation of Observation Schedules for Tracking Satellites with Structured-Chromosome GA Optimisation. IEEE Congr. Evol. Comput. CEC, Wellington: 2019.

For more information call me

Filippi G, Vasile M, Korondi PZ, Marchi M, Poloni C. Robust design optimisation of dynamical space systems. 8th Int. Syst. Concurr. Eng. Sp. Appl. Conf., Glasgow: 2018.

Filippi G, Marchi M, Vasile M, Vercesi P. Evidence-Based Robust Optimisation of Space Systems with Evidence Network Models. IEEE Congr. Evol. Comput. CEC, Rio De Janeiro: 2018.

Filippi G, Krpelik D, Korondi PZ, Vasile M, Marchi M, Poloni C. Space systems resilience engineering and global system reliability optimisation under imprecision and epistemic uncertainty. Proc. Int. Astronautica Congr. IAC, Bremen: 2018.

Absil CO, Filippi G, Riccardi A, Vasile M. A Variance-Based Estimation of the Resilience Indices in the Preliminary Design Optimisation of Engineering Systems Under Epistemic Uncertainty. EUROGEN, Madrid: 2017.

Vasile M, Filippi G, Ortega Absil C, Riccardi A. Fast belief estimation in evidence network models. EUROGEN, Madrid: 2017.

Book of Proceedings

Filippi G, Vasile M. Inflationary Differential Evolution for Constrained Multi-Objective Optimisation Problems. Bioinspired Optimization Methods and Their Applications, Springer, 2021, https://doi.org/10.1007/978-3-030-63710-1.

Filippi G, Vasile M. Network resilience optimisation of complex systems. International Conference on Uncertainty Quantification and Optimisation UQOP, Bruxelles: 2020.

Filippi G, Vasile M. A Multi Layer Evidence Network Model for the Design Process of Space Systems under Epistemic Uncertainty. In: Advances in Evolutionary and Deterministic Methods for Design, Optimisation and Control in Engineering and Sciences, Springer ECCOMAS, 2021; 10.1007/978-3-030-57422-2.

Journal papers

Filippi G, Vasile M, Krpelik D, Korondi PZ, Marchi M, Poloni C. Space systems resilience optimisation under epistemic uncertainty. Acta Astronaut 2019. doi: 10.1016/j.actaastro.2019.08.024.

Filippi G, Vasile M. Global Solution of Constrained Min-Max Problems with Inflationary Differential Evolution. In: Minisci E, Riccardi A, Vasile M, editors. Optim. Sp. Eng. OSE, Springer; 2020.

Book Chapters

Filippi G, Vasile M. Introduction to Evidence-Based Robust Optimisation. In: Vasile M, editor. Optim. Under Uncertain. with Appl. to Aerosp. Eng., Springer Nature; 2020.

Extracurricular Activity

work experiences

Music teacher, church organist, waiter.

Interests and Activities

Reading, playing music, travelling, speleology.

Personal skills

Languages

Italian: Native speaker

English: Advanced proficiency.

Computer software

Programming: labVIEW, MATLAB, Python, Julia

CAD-CAE: SolidWorks

Fluid Dynamics: ANSYS Fluent, CFD, Xfoil

Optimization: modeFRONTIER

I authorize the use of my personal data in compliance with the law on the protection of personal data: art. 13, D. Lgs. 196/2003.