Florimond Guéniat, PhD *19 novembre, 1984*

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Experience

Birmingham City Univ. — Birmingham, UK
Academic Lead Mechanical Engineering — *2023 – present*
Manage the research and teaching outputs of 24 academics. Responsabilities are to provide academic leadership for mechanical and automotive engineering
— Developping an industry-relevant curriculum
— Promoting impactfull research and knowledge exchange
— Contributing to the recruitment of staff and ensure resources are in place

Birmingham City Univ. — Birmingham, UK
Team Lead automotive Engineering — *2022 – 2023*
Manage the research and teaching outputs of 12 academics.
— NSS score improved from 58.3% to 86.3%
— Research outputs by the team increased by 50% on the period, for 9 out 12 academics
— Number of external funding applications by the team increased on the period by 75%

Birmingham City Univ. — Birmingham, UK
Course Lead MSc automotive Engineering — *2022 – present*
Manage the MSc automotive engineering.

Birmingham City Univ. — Birmingham, UK
Senior Lecturer in Control and Mechanical Engineering — *2021 – present*
Teaching in Automotive & Control Engineering and Applied Mathematics.
Research in smart aerodynamics, and design & optimization of networks of smart minigrids.

Birmingham City Univ. — Birmingham, UK
Lecturer in Control and Mechanical Engineering — *2018 – 2021*
Research and Teaching in Automotive & Control Engineering and Applied Mathematics.

Univ. of Illinois — Urbana-Champain, Il, US
Research Scientist — *2016 – 2018*
Identification of slow manifold and reduced order models in stiff systems. Application to large-scale combustion.

Florida State — Tallahassee, Fl, US
Research Scientist — *2014 – 2016*
Closed-loop control of fluid flows via clusters and statistical learning. Application to fluid mechanics.
Data assimilation with particle filters.

LIMSI-CNRS — Orsay, France
Research Scientist — *2013 – 2014*
Identification of invariant structures, modal decomposition and reduced-order models. Application to turbulent flows.

LIMSI-CNRS — Orsay, France
Graduate Research Assistant — *2010 – 2013*
Identification of invariant structures, modal decomposition and reduced-order models. Application to turbulent flows.
Computer-human interfaces for the exploration of scientific dataset.

Please refer to my website for a more complete list of work experiences along with a list of collaborators and referees.

Education

Birmingham City Univ. — Birmingham, UK
Postgraduate Certificate in Higher Education — *2019-2020*
PGCert in Enhancing Learning, Teaching and Assessment Practice in Higher Education.

Univ. Paris Sud — Orsay, France
PhD in Mechanical Engineering — *2010 – 2013*
Thesis entitled: "Coherent structures in Fluid Mechanics, and Human-Computer interface for SciViz".
Graduated with distinctions.

Univ. Paris Sud — Orsay, France
Bachelor and Master degree of Mechanical Engineering — *2008 – 2010*
Bachelor and Master degrees from Paris-Sud Univ.
Thesis entitled: "Koopman Modes: Filtering and modeling turbulent flows".
Graduated with distinctions.

Honors & Awards

Member of the Scientific Committee of the Digital Tools and Uses Congress
Chair for the session on "Optimal Control", European Control Conference 2021
Reviewer for
- EPSRC (turbulence)
- Physics of Fluids
- Theoretical and Computational Fluid Dynamics
- International Communications in Heat and Mass Transfer
- NeuralIPS 2016
- EuroHaptics 2014

2022 — Seattle
Best presenter Award — *IEEE World AI IoT Congress* (*IEEE AIIoT 2022*)
Enhanced Data-Driven LoRa LP-WAN Channel Model in Birmingham

2014 — University of Edimburgh
Best paper award — *Virtual Reality Software and Technology* (*VRST 2014*)
A Portable Interface for Tangible Exploration of Volumetric Data,

2012 — Ecole Polytechnique
Best paper award — *Digiteo 2012*
Detection of Coherent Structures in a Flow and Interaction with Large Dataset

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Research

20+ graduated students, 5 post-graduated students

Last Name	First Name	Role	Degree	Date
Nejati	Muhammad	Chair	PhD	2022-
Elsabaa	Elsabaa	Co Chair	PhD	2021-
Maryam	Sadhia	Chair	PhD	2018-2021
Issartel	Paul	Co Chair	PhD	2012-2017

Organizer of the International Workshop on Data-driven strategies to control engineering flows - French Ambassy, London, 2020
https://uk.ambafrance.org/Seed-meeting-Data-driven-control-for-engineering-flows-symposium

Books and book chapters

Sandeep Dhundhara, Mandeep Sharma, Florimond Guéniat, and Yogendra Arya. "Overview of the renewable-dominated power systems and their frequency regulation issues". In: *Advanced Frequency Regulation Strategies in Renewable-Dominated Power Systems*. Elsevier, 2024, pp. 1–19.

Samsul Ariffin Bin Abdul Karim, Mark Ovinis, and Florimond Gueniat. *Artificial Intelligence: Ethics and Safety in Engineering*. Elsevier, 2024.

Publications in International journal with peer review process

F. Gueniat and S. Maryam. "A comprehensive and policy-oriented model of the hydrogen vehicle fleet composition, applied to the UK market". In: *Environment Systems and Decisions* (2023).

V. Baker, F. Guéniat, D. Axford, P Aller, N Baker, G. Leen, and P Docker. "Tractor beam acoustic levitation for time resolved crystallography experiments". In: *Journal of Physics: Conference Series* (2022).

Emad Soltani, Ehsan Ahmadi, Florimond Gueniat, and Mohammad Reza Salami. "A review of bridge health monitoring based on machine learning". In: *Proceedings of the Institution of Civil Engineers* (2022), pp. 1–11.

S. Bryngelson, F. Gueniat, and J.B. Freund. "Irregular dynamics of cellular blood flow in a model microvessel." In: *Physical Review E* 1.100 (2019), p. 012203.

P. Issartel, F. Guéniat, T. Isenberg, and M. Ammi. "Analysis of Locally Coupled 3D Manipulation Mappings Based on Mobile Device Motion". In: *Presence: Teleoperators and Virtual Environments* 26.1 (2017), pp. 66–95.

F. Guéniat, L. Mathelin, and M.Y. Hussaini. "A statistical learning strategy for closed-loop control of fluid flows". In: *Theoritical Computational Fluid Dynamics* 30.6 (Dec. 2016), pp. 497–510.

F. Guéniat, L. Mathelin, and L.R. Pastur. "A dynamic mode decomposition approach for large and arbitrarily sampled systems". In: *Physics of Fluids* 27.2 (Feb. 2015), p. 025113.

F. Guéniat, L. Pastur, and F. Lusseyran. "Investigating mode competition and three-dimensional features from two-dimensional velocity fields in an open cavity flow by modal decompositions". In: *Physics of Fluids* 26.8 (Aug. 2014), p. 085101.

A. Cammilleri, F. Guéniat, J. Carlier, L. Pastur, E. Memin, F. Lusseyran, and G. Artana. "POD-spectral decomposition for fluid flow analysis and model reduction". In: *Theoritical Computational Fluid Dynamics* 27.6 (Feb. 2013), pp. 787–815.

Publications in proceedings of international conferences with peer review process

A. ElSabaa, F. Gueniat, W. Wu, and M. Ward. "Enhanced Data-Driven LoRa LP-WAN Channel Model in Birmingham". In: *Proceedings of the IEEE AIIOT*. 2022.

M. Faisal Shehzad and F. Gueniat. "Modeling and Optimal Control of Energy Storage System For Battery Life Extension Via Model Predictive Control". In: *Proceedings of European Control Conference*. 2021.

M. Faisal Shehzad and F. Gueniat. "Optimal operation of renewable energy microgrids considering lifetime characteristics of battery energy storage system". In: *Proceedings of the 60th IEEE Conference on Decision and Control*. 2021.

F. Gueniat. "Deep reinforcement learning strategies for the reduction of the drag in the flow pas buff bodies". In: *ATE HEFAT*. 2021.

F.A. Laureano De Leon, F. Guéniat, and H.T. Madabushi. "SemEval-2020 Task 9: The effectiveness of code-switched word embeddings for sentiment analysis". In: *Coling 2020*. 2020.

F. Gueniat. "Reduced Order Modeling in Combustion". In: *th International Symposium : Bifurcations and Instabilities in Fluid Dynamics*. 2019.

F. Gueniat. "Stokes flows and chaos - studying the dynamics of red blood cells". In: *Stokes 200, Penbroke College, Cambridge*. 2019.

C. Pivot, L. Mathelin, L. Cordier, F. Gueniat, and B.R Noack. "A continuous reinforcement learning strategy for closed-loop control in fluid dynamics". In: *Proc. of AIAA AVIATION Forum*. 2017.

P. Issartel, L. Besancon, F. Guéniat, T. Isenberg, and M. Ammi. "Preference Between Allocentric and Egocentric 3D Manipulation in a Locally Coupled Configuration". In: *Proceedings of the 2016 Symposium on Spatial User Interaction (SUI2016)*. 2016, pp. 79–88.

F. Guéniat, L. Mathelin, and Y.M. Hussaini. "State aggregation and reinforcement learning for the closed-loop control of black-box systems". In: *Bifurcations and Instabilities in Fluid Dynamics*. 2015.

P. Issartel, F. Guéniat, S. Coquillart, and M. Ammi. "Perceiving Mass in Mixed Reality through Pseudo-Haptic Rendering of Newton's Third Law". In: *ieee Virtual Reality*. 2015, pp. 41–46.

P. Issartel, F. Guéniat, and M. Ammi. "A Portable Interface for Tangible Exploration of Volumetric Data". In: *Virtual Reality Software and Technology*. 2014, pp. 209–210.

P. Issartel, F. Guéniat, and M. Ammi. "Slicing Techniques for Handheld Augmented Reality". In: *Symposium on 3D User Interfaces (3DUi 2014)*. 2014, pp. 39–45.

F. Guéniat, J. Christophe, Y. Gaffary, and M. Ammi. "Tangible Windows for a free Exploration of Wide 3D Virtual Environment". In: *Proceedings of the 19th ACM Symposium on Virtual Reality Software and Technology*. Ed. by ACM. ACM, 2013, pp. 115–118.

F. Guéniat, L. Pastur, Y. Fraigneau, and F. Lusseyran. "Lagrangian Coherent Structures in Open Cavity Flows". In: *14th European Turbulence Conference*. 2013.

F. Guéniat, L. Pastur, Y. Fraigneau, and F. Lusseyran. "Shear layer modes competition in Open Cavity Flow: Experimental and Numerical Exploration of 3D features through a 3D DMD analysis". In: *Bifurcations and Instabilities in Fluid Dynamics*. 2013.

F. Lusseyran, J. Basley, F. Guéniat, and L. Pastur. "Pertinence des champs bidimensionnels dans l'analyse des". In: *Actes du 21ème Congrès Français de Mécanique*. 2013, pp. 1–6.

F. Guéniat, Y. Gaffary, L. Pastur, and A. Mehdi. "Haptic stimulus for the discrimination between intrinsic properties of dynamic systems". In: *Lectures notes in Computer Science*. Vol. 7283. Springer, 2012, pp. 37–42.

T. Klein, F. Guéniat, L. Pastur, F. Vernier, and T. Isenberg. "A Design Study of Direct-Touch Interaction for Exploratory 3D Scientific Visualization". In: *Computer Graphic Forum*. Vol. 31. 3. June 2012, pp. 1225–1234.

Please refer to my website for an exhaustive list of my scientific production.

Grants and fundings

2023

— "ArtPackAI: Intelligent Art Packaging with AI Optimization", BridgeAI Innovate UK, £38k, successful
Automation of the AI-powered pipeline to design optimized protective packaging for art pieces.
— "IoT4Solarv2", Research grant, InnovateUK, £1100k , unsucessful
Design of a smart predictive O&M AI system for smart grid providers in Nigerio.
— "Innovative approaches to downstream energy utilisation from solar irrigation in India and Bangladesh, Research grant, InnovateUK, £300k, unsucesfull
Design of an innovative business model involving solar based pumps and cold storages in Indian and Bangladesh.

2022

— "Artificial intelligence evolutionAry biomimetic route drag reduction", EPSRC Horizon 2022, £200k, unsuccessful
— "Energy crisis in Bangladesh and India", InnovateUK Catalyst round 9, £100k, unsucessful
— "Cascade", Diversity Impact Programme, RAEng, £100k, unsucesfull

2021

— "Support for attending the Conference on Decision and Control 2021", Travel grant, SuperSolar Scheme, £500, successful
— "on-grid@BCU", Equipment grant, BCU internal funding, £3k, successful

2020

— "Workshop on Data-driven strategies to control engineering flows", workshop grant French Ambassy, £10k, sucessful
— "off-grid@BCU", Equipment grant, BCU internal funding, £6k, successful
— "IoT4Solar", Research grant, InnovateUK, £1400k , unsuccessful
— "A Machine Learning-based Approach for Drag Reduction", Research grant, EPSRC New-Horizon, £300k , unsuccessful

2010

— "Fluctus", PhD funding, Digiteo, £120k, successful

Teaching

Teaching Evaluation Summary:
Awarded by the French Counsel of Universities in Computer Science (2013) and Mechanical Engineering (2014).
Awarded PGCERT in 2020.

Birmingham City Univ. — Birmingham, UK

Lecturer then Senior Lecturer in Control and Mechanical Engineering — *2018 –*

— Current Module Leader
  — ENG7147: Advanced Powertrain and Control.
  Satisfaction increased from 3.5 (2020) to 4.5 (2023)
  — ENG7148: Control Engineering.
  Satisfaction increased from 3.6 (2020) to 4.7 (2023)
— Past Module Leader in Mechanical engineering
  — ENG6061: Power and Energy Systems II.
  — ENG6074: Dynamics and Control.
— Past Module Leader in Automotive engineering
  — ENG6032: Hybrid Vehicles.
  — ENG6076: Vehicle Electronics and Control.
  — ENG7053: Vehicle Control Systems.
— Past Continuous Professional Development (CPD) course
  — ENG7217: Electric Vehicle Technologies.

Univ. Paris Sud — Orsay, France

Teaching assistant — *2011 – 2013*

— Computer science
  — LIS 3201: Algorithms and programming theory
  — ME 327: Haptics and physics engine
— Mathematics
  — MGF 3301: Linear Algrebra
  — MAS 3105: Linear Algrebra

Univ. Pierre et Marie Curie — Paris, France

Teaching assistant — *2010 – 2011*

— Mechanical Engineering

— EML3016: Fluid mechanics Lab