Dr MADALINA I SAS, **PhD, MEng, ACGI**

I am a driven, perfectionist, highly-accomplished and multifaceted researcher and engineer with a passion for interdisciplinary research, technological ethics, science communication and teaching.

✉ madalina.sas@pm.me
🌐 mis.pm
⎇ gitlab.com/miscodes

WORK EXPERIENCE

2024 - present | **FairOnChain** — *Researcher*
FairOnChain is an ambitious European collaboration aiming to develop a publicly accessible infrastructure for blockchain research following the FAIR principles of open science.

2020 - present | **Synch.Live** — *System Architect & Researcher*
Designing, building and operating a free-open source framework for collective intelligence research in humans using RaspberryPi.

2017 - present | **Freelance** — *Software & Cybersecurity Consultant*
Supporting small business with cybersecurity, especially on their internet presence and on the Windows platform, but also project-based web development, software engineering and quantitative research.

2017 - 2020 | **Netcraft** — *Internet Services Developer*
Working in content filtering and automated countermeasures against phishing and malware. Running the Netcraft web server survey, collecting internet statistics.

2014 - 2016 | **King's CTU** — *Junior Clinical Software Analyst*
Full-stack development of bespoke systems for clinical trials, including automating the randomisation process, treatment management systems, data validation, trial design, documentation and medical SOPs. Good Clinical Practice training.

2015 | **Imperial College London** — *Undergraduate Researcher*
Using program verification logic to prove correctness of concurrent data structures.

2014 | **Google** — *Software Engineering Intern*
Front-end and back-end development for user settings in Java.

TEACHING EXPERIENCE

2020 – 2023 | **Cryptography Engineering** — *Lecturer*
Module leader for the Cryptography Engineering course, including presenting lectures, tutorials and assessment.

2020 – 2023 | **Ethics, Privacy, AI in society** — *Lab demonstrator*
Helping students with Python-based AI fairness coursework.

2020 – 2023 | **Complexity & Networks** — *Lab demonstrator*
Helping students with Python-based simulations of the Oslo sandpile model and Barabasi-Albert network model.

2020 – 2023 | **Cryptography Engineering** — *Teaching Assistant*
Participating in tutorials, creating Jupyter notebooks with practical exercises, and presenting them in class.

2020 | **Net & Web Security** — *Teaching Assistant*
Answering students' questions on course content during tutorials.

LANGUAGES

Python, Haskell, Perl, C#, C++, JavaScript, SQL, Scala, R, Nix

Romanian (native)
English (bilingual)

RESEARCH & TECH SKILLS

Modelling & Simulation, Information Theory, Network Science, Signal Processing, Automation & Orchestration, Dynamical Systems, Interpretable Machine Learning, Computational Neuroscience

OTHER SKILLS & INTERESTS

First Aid, Intermediate Ham Radio licence, Professional degree in Photography, Web & Graphic Design, Philosophy, Literature, Open Source

EDUCATION

2020 - 2025 | **Imperial College London,** UK — *Complexity Science PhD (pass with no corrections)*
2013 - 2017 | **Imperial College London,** UK — *Computing MEng (first class, distinction)*
2011 - 2013 | **Theodor T Burada Arts School,** Constanta, Romania — *Photography diploma*
2009 - 2013 | **Ovidius High-School,** Constanta, Romania — *Mathematics and Computer Science*

CONFERENCES

2024 | *Conference on Autonomous Computing and Self-Organising Systems (ACSOS), Aarhus, Denmark*
2024 | *Workshop on Agent-Based Modelling of Human Behaviour (ABMHuB'24)*
2023 | *The Future of the Classical Concert, Friedrichshaven, Germany*
2023 | *Association for the Scientific Study of Consciousness Conference (ASSC26), New York, NY, USA*
2023 | *Santa Fe Institute Collective Intelligence Symposium, Santa Fe, NM, USA*
2022 | *Conference on Complex Systems (CCS), Palma de Mallorca, Spain*
2022 | *Data Natives Conference, London, UK*
2020 | *Computing in Cardiology (CinC), Rimini, Italy*

AWARDS & GRANTS

2020 | **Splunk Scholar** — *PhD Scholarship*
2018 | **SnowWall**— *HutZero finalist*
2017 | **SnowWall**— *Imperial College London Distinction*
2017 | **1st prize - InterAce Cybersecurity Challenge 2017**
2013 | **Computational Morality** — *Imperial College Corporate Partnership Prize*

SELECTED PUBLICATIONS

An information-theoretic analysis of emergence and leadership in self-organised collective action

2024 | in IEEE ACSOS 2024 | doi: 10.1109/ACSOS61780.2024.00028

Sas MI*, Scott M*, Pitt JV

Synch.Live: Collective problem-solving through flocking motion induces higher connectedness to others

2023 | doi: 10.31234/osf.io/e8j39

Sas MI, Mediano PAM, Rosas FE, Leone H, Sas A, Lockwood CJ, Jensen HJ, Bor D

Multiscale coordination dynamics between performers and audience characterise innovative experience by Western classical music improvisation

2023 | in Scientific Reports **15,** 10097 (2025) | doi: 10.1038/s41598-025-90271-1

Nozawa T*, **Sas MI***, Dolan D, Rosas FE, Rajpal H, Timmermann C, Mediano PAM, Honda K, Amano S, Miyake Y, Jensen HJ

Growing polarisation around climate change on social media

2021 | in Nature Climate Change **12,** 1114–1121 (2022) | doi: 10.1038/s41558-022-01527-x

Falkenberg M, Galeazzi A, Torricelli M, Di Marco N, Larosa F, **Sas MI**, Mekacher A, Pearce W, Zollo F, Quattrociocchi W, Baronchelli A

Interpretable XGBoost classification of 12-lead ECG applying information theory measures from neuroscience

2020 | in IEEE Computing in Cardiology | doi: 10.22489/CinC.2020.185

Raipal H*, **Sas MI***, Lockwood C, Joakim R, Peters NS, Falkenberg M