Cédric Mesnage, PhD

CONTACT

Name: Dr. Cédric Sébastien Mesnage
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RESEARCH INTERESTS Machine intelligence, Data Science, Machine Learning, Computer Vision, Reinforcement Learning, Web Science, Social Media, Human Computer Interaction, Artificial Intelligence, Information Discovery & Recommendation, User Experience, Participatory Design, Software Engineering, Music Discovery, Environmental Intelligence.

COMPUTER SKILLS Transformers, Python, Pandas, Scipy, Numpy, Tensorflow, Pytorch, Yolov5, Keras, Scikit-learn, Jupyter, PyCharm, Matplotlib, R, Django, Pyramid, Flask, Git, SQL, MySQL, PostgreSQL, NOSQL, MongoDB, JSON, Airflow, Web APIs, Vue, HTML, Javascript, CSS, XML, RDF, Latex, Office, Linux systems, AWS, Google Cloud, Digital Ocean.

PROFESSIONAL EXPERIENCE

Permanent Research Fellow   **Oct 2022 – today**
Institute for Data Science and AI, University of Exeter, Exeter, United Kingdom

Deliver pilot projects with Data Science, Machine Learning and Artificial Intelligence for other departments at the University.

Leader of IDSAI Early Career Researchers Network with more than 100 members. We run events such as the 2024 Future of AI Awards and 2025 Superintelligence Conference as well as social events and lightning talks.

I developed extensive experience of use of High Performance Computers, namely JADE II and ISAMBARD-AI. Researcher on seed-corn projects : structured data extraction from text with LLMs for the National Gallery, AI for planetary climates, Blood test for dementia, AI for Net Zero, Using deep learning to automate species identification under data scarcity.

Research Fellowship developed on Artificial General Intelligence, UKRI grant applications and program committee member for AAAI and CVPR A* conferences.

Universal Research Center, London, United Kingdom

Research Scientist   **May 2020 – Sep 2022**
Work on collaborations on project with commercialisation potential. Deliver consulting to companies with Software Engineering, Data Science and Machine Learning. Conduct research and actions on societal critical topics such as climate change and pandemics as well as Artificial Intelligence. Web application development.

Solent University, School of Media Arts and Technology, Southampton, United Kingdom

Lecturer in Data Science – Computing   **Sep 2016 – Feb 2020**

Teaching Level 6 Data Science, 4-5 databases, level 7 data mining and algorithms, data visualisation, data management, data analytics. Continued research on music information, collected data from Facebook and tickets websites and produced a heatmap of the UK, France and the US music hotspots used by UK music in their report on Liverpool. Research on solving the climate crisis with the Data Science class led to the understanding that we need to plant large quantities of trees to sequestrate gas emissions; making predictions in various scenarios. Mentoring of Master and Bachelor students on their final year projects and involving them in my research. Development of reinforcement learning artificial intelligences for the game of tic-tac-toe and RobotWar.

Sound Diplomacy, London, via musicintelligence.rocks

Consultant   **Jan 2018 − Aug 2018**

Consultant on the development of a music information platform to assess the situation in a city regarding concerts, businesses, artists etc.

University of Bristol, Intelligent Systems Lab, Department of Engineering Mathematics, Bristol, United Kingdom

Research Associate in Data Science Manager: Pr. Tijl De Bie **Nov 2014 − Jan 2016**

I built a MongoDB database of 50,000 UK bands and periodically fetch all tweets about them from Twitter as well as Souncloud playcounts. Development of UK maps to analyse the repartition of artists and their fans within the UK. Implemented a trend extraction method to recommend trending artists and get an overview of trending genres.

CS Corporation, London, www.csc.io

Director   **May 2013 − Nov 2014**

Freelancing for datasurgery.com and decibel.net, Creation of artists websites. Representation of Decibel at the Paris Music hack day(April 2014).

Queen Mary, University of London, Center for Digital Music, London, United Kingdom

Research Assistant   Manager: Dr. Simon Dixon   **Mar 2011 − Aug 2011**

I contributed to the LinkedBrainz project which aim was to make the data from Musicbrainz accessible as a Semantic Web endpoint. MusicBrainz collects crowd sourced music metadata and makes it available through its website and Web APIs. LinkedBrainz added RDFa support in the Musicbrainz website and a SPARQL endpoint, both using the music ontology.

University of Lugano, Faculty of Informatics, Lugano, Switzerland

Research Assistant   Manager: Pr. Mehdi Jazayeri   **Oct 2005 − Oct 2010**

As a research assistant I have been working on the NEPOMUK project, assisting in teaching classes and mentoring students.

NEPOMUK, European Project FP7

Software Architect   **Jan 2006 − Jan 2009**

The NEPOMUK project aimed at using Semantic Web technologies on the desktop to organise and share personal information. My tasks were the set up of the project development cycle by interviewing developers of the project to analyse provided technical features, extract desired functionalities from user studies and link them together in the project software architecture.

Infodoc group, GREYC, Caen, France

developer   **2001 − 2003**

Worked on the development of the geographic anteserver graphical geographic query and heterogeneous search in geographic information systems.

EDUCATION   **Commission Nationale des Universités**
French qualification to the function of Maître de conférences, section 27   **2013**

University of Lugano, Faculty of Informatics, Switzerland

Doctor of Philosophy   **2012**

- Title: Social shuffle: Music discovery with tag navigation and social diffusion
- Supervisor: Pr. Mehdi Jazayeri

In my PhD thesis work, I developed user experiments as web applications to investigate means of information discovery. I built and compared bayesian models to generate tag clouds to navigate a dataset of songs and social tags crawled from Last.fm. I experimented with recommendation of music videos using social network relationships in a Facebook application.

Université de Caen, GREYC, France

Master en Algorithmique et Modélisation de l'Information   **2005**

Université de Caen, France

Diplome Universitaire de Technologie(DUT), Informatique   **2002**

AWARDS   **Technical Preparatory Access stage of Isambard-AI Phase 1**, fourth cohort, Jan 2025, 50000Nh, 140K£.

ECRN Enhancement Award, 2025, Foundation of an ECRN committee to organise the First Superintelligence Conference.

ECRN Enhancement Award, 2024, Future of AI.

NVIDIA Research Award, 2019, Lancebot.

Research, Innovation and Knowledge Exchange (RIKE) Award, Solent University, 2019, CRM:0518119, Lancebot, the best AI for RobotWar.

Microsoft Azure Research Award, 2017, CRM:0518119, Kulitta: Digital music landscape of a City.

University of Sheffield, Master in Data Science , Sheffield, UK

Data Science, Master course   **2022-2024**

External supervisor on Master students dissertations. 5 students per year.

EPFL, Master in Sustainability , Lausanne, Switzerland

Data Science, Master course   **2021-2022**

Mentored 4 groups of students project on the topic of planting desert areas to mitigate climate change.

Solent University, Computing , Southampton, UK

Data Science, Level 6 Bachelor Course   **2016-2019**

Created a class on Data Science, introducing the principles, file formats, relational databases, distributed databases and NOSQL, preprocessing with Pandas, data mining and machine learning algorithms such as Apriori, Clustering with K means, classification with random forest, SVM and neural networks, regression and prediction; data visualisation with Orange data mining and python libraries; asking relevant questions and report on answers and solutions.

Introduction to Databases, Level 4 Bachelor Course   **2016-2019**
Introduction to relational databases concepts, the relational model, querying with SQL, aggregation, functions, statistics, programming for databases in Python.

Enterprise database development, Level 5 Bachelor Course   **2016-2019**
Advanced databases; MongoDB, PLSQL, working with concurrent access and permissions.

Data Mining and algorithms, Level 7 Master Course   **2016-2019**
Reading group on various conferences around DM, AI and Machine learning, Python programming, Algorithms, mini research project.

Data Visualisation, Level 7 Master Course   **2016-2019**
Principles, Python libraries for Data Science, Pandas, Seaborn, Matplotlib.

Data Management, Level 7 Master Course   **2016-2019**
Relational databases, NOSQL, MongoDB, programming for databases, Information Retrieval.

Data Analytics, Level 7 Master Course   **2016-2019**
Analytics platforms, Orange Data Mining, Spreadsheets, statistics, analytics methods.

University of Bristol, Engineering Mathematics, Bristol, UK

Artificial Intelligence, Bachelor Course   **Apr 2015**

Introduction to the topic of Music Discovery from an Artificial Intelligence perspective.

University of Lugano, Faculty of Informatics, Lugano, Switzerland

Information Retrieval, Master Course **2nd Semester 2009**

Teaching of the Perl programming language, set up of exercises to illustrate indexation and search methods within documents.

Social Software Engineering Bachelor Course **2nd Semester 2008**

Designed and taught a course on engineering of social software. Teaching of the Ruby on Rails web development framework. Study and practice of the full development cycle, brainstorming, user studies, software architecture, agile development.

Ruby On Rails, Bachelor Course **2nd Semester 2006**

Designed and co-taught a course on web development with the Ruby on Rails framework. Teaching of Ruby, MySQL database management, Web APIs, dynamic user-interfaces with AJAX.

Algorithms and Data Structures, Bachelor Course **1st Semester 2006**

Assistant in teaching Algorithms and data structures, teaching of the C programming language. Set up of exercises to program algorithms and measure their complexity.

University of Caen, ESITC, Caen, France

TP/TD Algorithmique et C++, Cours de Licence **1st Semester 2005**

Teaching of the C++ programming language.

PUBLICATIONS

Conferences

- Extracting Semantics from Cultural Heritage Text, Cédric Mesnage, William Thorne, Luca Brunk, Joseph Padfield, Fabrizio Nevola. Isambard-Day, Bristol, Mar, 2025.

- High Quality Diffusion Distillation Training on a Single GPU with Relative and Absolute Position Matching, Guoqiang Zhang, Kenta Niwa, JP Lewis, Dr Cédric Mesnage, W. Bastiaan Kleijn, ICCV 2025(in review).

- Thinking as an Action. Dr Cédric Mesnage, C.S. (2024). In: Thórisson, K.R., Isaev, P., Sheikhlar, A. (eds) Artificial General Intelligence. AGI 2024. Lecture Notes in Computer Science(), vol 14951. Springer, Cham. https://doi.org/10.1007/978-3-031-65572-2_14

- Desert Greening, a Silver Bullet? C. Mesnage, M. Frey, M. Poretti, D. Scalabrin and M. Vlachos, Climate Informatics, The Collider, Asheville, USA, 9-13 May 2022.

- Solving the climate crisis - A tree planting campaign, Mesnage C., Understanding the post truth society conference, Oct 2019, Malta.

- Lancebot - an AI for RobotWar, Mesnage C., BCS Real AI conference, BCS, London, 2019.

- Teaching to solve Global Warming with Data Science, Mesnage Cédric, International Conference on Information, Communication Technologies in Education, ICICTE 2019.

- Using the Musicbrainz database in the classroom, Mesnage, Cédric, International Conference on Information, Communication Technologies in Education (ICICTE), 338–344, 2017.

- A Data Science Approach to the Study of Music in the UK, Mesnage C., Music Academic Partnership, UK MUSIC, LEEDS, 2017

- Detecting Trends in Twitter Time Series, R. Santos-Rodríguez, C. Mesnage, J. Lijffijt, T. De Bie, IEEE International Workshop on Machine Learning for Signal Processing, 2016.

- Interactively exploring supply and demand in the UK independent music scene. M. McVicar, C. Mesnage, J. Lijffijt, T. De Bie, ECML PKDD, demo track, 2015.

- Supply and demand of independent UK music artists on the web. M. McVicar, C. Mesnage, J. Lijffijt, E. Spyropoulou, T. De Bie, ACM Web Science, Oxford, Jun 2015.

- Extending Ruby on Rails for Semantic Web applications. C. Mesnage and E. Oren, In Proceedings of the International Conference on Web Engineering, Jul. 2007, Demo presentation.

- The NEPOMUK Project – On the way to the Social Semantic Desktop. T. Groza, S. Handschuh, K. Moller, G. Grimnes, L. Sauermann, E. Minack, C. Mesnage, M. Jazayeri, G. Reif, R. Gudjonsdottir. In Proceedings of the Third International Conference on Semantic Technologies (I-SEMANTICS 2007), Graz, Austria, 2007.

- Collaboration on the Social Semantic Desktop. G. Reif, T. Groza, S. Handschuh, C. Mesnage, M. Jazayeri and R. Gudjonsdottir, In UMICS 2007 (Ubiquitous Mobile Information and Collaboration Systems), Jun. 2007.

Book chapters

- Climate Emergency : Plant Trees as an Immediate Solution. Dr. C S Mesnage, The Times Malta. 26th October 2019.

- The Social Semantic Desktop - a new paradigm towards deploying the semantic Web on the desktop. A. Bernardi, S. Decker, L. van Elst, G. Grimnes, T. Groza, S. Handschuh, M. Jazayeri, C. Mesnage, K. Moller, G. Reif, M. Sintek (2008). In: J. Cardoso, M. Lytras. Semantic web engineering in the knowledge society. Hershey, Pennsylvania, USA, 290-313. ISBN 978-1-60566-112-4.

- Modern Web Application Development. M. Jazayeri, C. Mesnage, and J. Rose. In: Andrea De Lucia, Filomena Ferrucci, Genny Tortora, Maurizio Tucci (eds.) Emerging Methods, Technologies and Process Management in Software Engineering. Wiley-IEEE Computer Society Press, February 2008.

Journals

- Copy-paste augmentation improves automatic species identification in camera trap images, Cédric S. Mesnage, Andrew Corbett, Jake Curry, Sareh

Rowlands, Anjan Dutta, Richard Everson, Benno I. Simmons. Journal, Ecology Evolution, 2025. (Submitted March 2025)

- Evaluating Inductive Reasoning and Programming Capabilities of Large Language Models With The One-Dimensional Abstract Reasoning Corpus. C. Mesnage, X. Wang, H. Dong, Aishwaryaprajna. Intelligenza Artificiale. Towards Neurosymbolic AI: Hybrid Models for Coupling Deductive and Inductive Reasoning, Special Issue Featuring Extended Papers from HYDRA 2024.

- Is a trillion trees enough? C. Mesnage, M. Vlachos - arXiv preprint arXiv:2007.00508, 2020 - arxiv.org

- SuMoTED: An intuitive edit distance between rooted unordered uniquely-labelled trees. M. McVicar, B. Sach, C. Mesnage, J. Lijffijt, E. Spyropoulou and T. De Bie. Pattern Recognition Letters (2016).

- Subjective interestingness of subgraph patterns. M. Van Leeuwen, T. De Bie, E. Spyropoulou, and C. Mesnage. Machine Learning (2016), pp 1-35.

- A flexible integration framework for Semantic Web 2.0 applications. E. Oren, C. Mesnage, B. Heitmann, A. Haller, M. Hauswirth, and S. Decker, IEEE Software, Sep. 2007.

Theses

- Social shuffle: Music Discovery with tag navigation and social diffusion, C. Mesnage, PhD Thesis, University of Lugano, Switzerland, 2012.

- Interactive and Cooperative Visual Data Mining of Evolving Software, C. Mesnage, Master thesis, University of Caen, France, 2005.

Workshops

- Cédric S. Mesnage, Xiaoyang Wang, Hang Dong and Aishwaryaprajna, Evaluating Inductive Reasoning Capabilities of Large Language Models With The One Dimensional Abstract Reasoning Corpus, HYDRA 2024 co-located with ECAI http://hdl.handle.net/10871/137421

- Is a trillion trees enough? C. Mesnage, M. Vlachos. In Review at : Data Science in Climate and Climate Impact Research, ETH Zurich, 20 August 2020.

- Trend Extraction on Twitter Time Series for Music Discovery, C. Mesnage, R. Santos-Rodríguez, M. McVicar, T. De Bie, Machine Learning for Music Discovery Workshop, co-located with ICML, Lille, Jul 2015.

- Music Discovery with Social Networks. C. Mesnage, A. Rafiq, S. Dixon and R. Brixtel. The 2nd workshop on music recommendation and discovery. Oct. 2011, co-located with ACM-RECSYS.

- Serendipitous Social Shuffle. C. Mesnage, R. Brixtel. The 1st workshop on music recommendation and discovery. Sep. 2010, co-located with ACM-RECSYS.

- Piloted Search and Recommendation with Social Tag Cloud-Based Navigation. C. Mesnage and M. Carman. The 1st workshop on music recommendation and discovery. Sep. 2010, co-located with ACM-RECSYS.
- Tag navigation, C. Mesnage and M. Carman. Proceedings of the 2nd international workshop on Social software engineering and applications, 29–32, co-located with ESEC/FSE 2009.
- Social thinking to design social software: A course experience report. C. Mesnage and M. Jazayeri. Proceedings of the 2nd international workshop on Social software engineering and applications, 19–24, 2008.
- Specifying the Collaborative Tagging System. C. Mesnage and M. Jazayeri, SAAW (2nd Semantic Annotation and Authoring Workshop) co-located with ISWC, November 2006.
- White Coats: Web-Visualization of Evolving Software in 3D. C. Mesnage and M. Lanza, VISSOFT : IEEE International Workshop on Visualizing Software for Understanding and Analysis, September 2005.

COMMUNITY SERVICE

- General chair Superintelligence conference 2025.
- Reviewer for AGI 2025.
- Reviewer for AAAI 2024-2025.
- Reviewer for CVPR 2023-2025.
- Reviewer for Climate Informatics conference 2022.
- Animation of the CODAG/MAD workgroups of the GREYC, Caen, dec 2021.
- Reviewer for International Conference on Information and Communication Technologies in Education, ICICTE 2020.
- Reviewer for the International Society for Music Information Retrieval, IS-MIR 2016.
- Reviewer for the International Society for Music Information Retrieval, IS-MIR 2015.
- Reviewer for the 2nd international workshop on Social software engineering and applications, 2009.

STUDENT SUPERVISION

- MSc Data Science: A Comparative Study of Code Generation and Thought Leadership in Programming Tasks between ChatGPT-3.5 and ChatGPT-4.0, Hanwen Zhang, 2024 University of Sheffield.
- MSc Data Science: Application of data science in analyzing blood sugar and BMI during pregnancy and the relationship between age and gestational diabetes, Guo Chen, 2024, University of Sheffield.
- MSc Data Science: Dynamic Portfolio Optimisation – A Comparative Analysis between Monte Carlo Simulation and Reinforcement Learning, Nikhil Gauba, 2024, University of Sheffield.

- MSc Data Science: Retrieval-Augmented Generation With Knowledge Graphs: A Semantic Approach to Safety Management Systems, Matthew Steele, 2024, University of Sheffield.
- MSc Data Science: How to Effectively Utilize Advanced Spatiotemporal Data Mining Techniques to Extract Meaningful Information from Spatiotemporal Data and Predict Urban Traffic Trends and Patterns, Ruilong Peng, 2024, University of Sheffield.
- MSc Data Science: Wei Zhang, 2023, University of Sheffield.
- MSc Data Science: Yanjiao Wang, 2023, University of Sheffield.
- MSc Data Science: Shagofta Shabashkhan, 2023, University of Sheffield.
- MSc Data Science: Suhimugan Kennadi, 2023, University of Sheffield.
- MSc Data Science: Meenakshi Mohan, 2023, University of Sheffield.
- BSc: AI and Art, Creating an AR Drawing Assistant, Julius B(i)ocker, 2019, Solent.
- BSc: Forecasting Personal Expenditure Using Machine-Learning, Edward Jeffreys, 2019, Solent.
- BSc: Text Classification for Project Management, Sanah Rathore, 2019, Solent.
- BSc: eBay Price Analyzer, Kirils Krivojs, 2019, Solent.
- BSc: Double Spiking Neural Networks, Kristoph Holthaus, 2019, Solent.
- BSc: Music Collaboration, Thandanani Dladla, 2019, Solent.
- BSc: Mobile Disaster Warning App, Guilherme Mendes Colaco, 2019, Solent.
- MSc Data Analytics: Solace – Ai For Sailing Boat, Girban Thangamba, 2018, Solent.
- MSc Data Analytics: Does Existing Data Mining Software, Such As Orange Data Mining, Provide A Sufficiently User-Friendly And Is There Scope For Improving User Functionality Through Widget Creation?, Olivia Hicks, 2018, Solent.
- BSc: SOLACE: Simulation environment for autonomous sailing, Alexandru Davalciuc, 2018, Solent.
- BSc: Solace: Artificial Intelligence, Eduard Alexa, 2018, Solent.
- BSc: Solace – Solent Autonomous Circumnavigation of the Earth, Harley Hanger, 2018, Solent.
- BSc: Developing an e-commerce web application which aims to enhance interactions between farmers and client while improving management, Jason Koranteng, 2018, Solent.
- BSc: Freight2Go, MAHTARR JENG , 2018, Solent.
- BSc: Symptom Checkers Websites: Are those websites good for people health? Are people using them in the right way?, Michalis Kontonikolas, 2018, Solent.
- BSc: AR Text Recognition App, Yoraine Diogo, 2018, Solent.
- BSc: Kulitta : Collecting Live Music Data, Beritan Seven, 2017, Solent.

- MSc: Recommending Independent Music to Twitter Users, Dhiraj Narwani, 2015, Bristol.
- MSc: Music Video Classification and Recommendation Service, Ethan Nguyen, 2015. Bristol.
- BSc: Tag Navigation of Social Music Data, Andrea Bellani, 2009, Lugano.
- BSc: Single Sign-on, Simone Guerra, 2008, Lugano.
- BSc: Interoperability in Social Networking Web Applications, Franco Sellitto, 2007, Lugano.

Languages   Professional French and English, proficient Italian, notions of Spanish and German.

References

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