

Miquel Perello Nieto

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Work Experience

- **Research Fellow** 2026 – Curr
University of Bristol, School of Engineering Mathematics and Technology Bristol, UK
- **Senior Research Associate** 2024 – 2026
University of Bristol, School of Engineering Mathematics and Technology Bristol, UK
 - Project The LEAP Digital Health Hub, EPSRC
- **Research Associate** 2017 – 2024
University of Bristol Bristol, UK
 - Project TAILOR – Trustworthy AI - Integration Reasoning, Learning and Optimization, HORIZON 2020
 - Project SPHERE Next Steps, EPSRC IRC
 - Project SPHERE – a Sensor Platform for HEalthcare in a Residential Environment, EPSRC IRC
- **Research Assistant** 2016 – 2016
Université de Strasbourg, ICube Laboratory Strasbourg, France
 - Project REFRAME – Rethinking the Essence, Flexibility and Reusability of Advanced Model Exploitation, CHIST-ERA – European Coordinated Research on Long-term Challenges in Information and Communication Sciences & Technologies ERA-Net
- **Research Assistant** 2015 – 2016
University of Bristol, Intelligent Systems Laboratory Bristol, UK
 - REFRAME project, CHIST-ERA
- **Research Assistant** 2014
Aalto University School of Science Espoo, Finland
 - Unsupervised Learning of Multiple Languages Using Recurrent Neural Networks
 - On the use of Convolutional Neural Networks for spatio-temporal feature extraction
- **Software Developer & Systems Administrator** 2010 – 2013
Faceras, S.L. Barcelona, Spain
 - Development of an **access control system along several buildings in Barcelona.**
- **Installer & Technical Service Manager** 2006 – 2010
DN Electrónica 2002, S.A. Martorell, Spain

Education

- **Ph.D. in Computer Science** 2016 – 2023
University of Bristol Bristol, UK

– Thesis **"Uncertainty aware classification: Augmenting classifiers to handle uncertainty"**.

- **M.Sc. in Machine Learning and Data Mining** **2013 – 2015**
Aalto University School of Science *Espoo, Finland*
 - Thesis **"Merging chrominance and luminance in early, medium and late fusion using Convolutional Neural Networks"** with distinction.
- **M.Sc. in Artificial Intelligence** **2012 – 2015**
Consortium of three universities: *Catalonia, Spain*
Technical University of Catalonia, University of Barcelona, and Rovira i Virgili University
- **B.Sc. in Technical Engineer in Computer Systems** **2007 – 2012**
Barcelona School of Informatics at the Technical University of Catalonia *Barcelona, Spain*
 - Thesis **"Design of a platform to test distributed control systems"** with distinction.

Peer-reviewed Publications

1. Noé, P. G., Perelló Nieto, M., Bonastre, J. F., & Flach, P., **Explaining a probabilistic prediction on the simplex with Shapley compositions** In: European Conference of Artificial Intelligence (ECAI), 392, p. 1124 – 1131, doi: 10.3233/FAIA240605 (Oct. 2024).
2. Tonkin, E. L., Holmes, M. H., Song, H., Twomey, N. J., Diethe, T. R., Kull, M., Perelló Nieto, M., Camplani, M., Hannuna, S. L., Fafoutis, X., Zhu, N., Woznowski, P. R., Tourte, G. J. L., Santos-Rodriguez, R., Flach, P. A. & Craddock, I. J., **A multi-sensor dataset with annotated activities of daily living recorded in a residential setting**, Scientific Data, 10, 162 (2023).
3. de Menezes e Silva Filho, T., Song, H., Perelló Nieto, M., Santos-Rodriguez, R., Kull, M. & Flach, P. A., **Classifier calibration: a survey on how to assess and improve predicted class probabilities** In: Machine Learning. 112, 9, p. 3211-3260 50 p. (May 2023)
4. Grant, S., Tonkin, E. L., Craddock, I. J., Blom, A. W., Holmes, M. H., Judge, A., Masullo, A., Perelló Nieto, M., Song, H., Whitehouse, M. R., Flach, P. A. & Gooberman-Hill, R., **Toward Enhanced Clinical Decision Support for Patients Undergoing a Hip or Knee Replacement: Focus Group and Interview Study With Surgeons** In: JMIR Perioperative Medicine. 6, 1, e36172 (Apr. 2023).
5. Yamagata, T., Tonkin, E. L., Arana Sanchez, B., Craddock, I. J., Perelló Nieto, M., Santos-Rodriguez, R., Yang, W. & Flach, P. A., **When the Ground Truth is not True: Modelling Human Biases in Temporal Annotations** ARDUOUS: Workshop at PerCom. 6 p (Jan. 2023)
6. Bi, H., Perelló Nieto, M., Tonkin, E., Santos-Rodriguez, R., Flach, P., & Craddock, I., **Recognizing human activities with attention mechanism on multi-source sensor data**. In Third International Conference on Computer Science and Communication Technology (ICCSCT 2022) (Vol. 12506, pp. 1137-1143). SPIE (Dec. 2022).
7. Poyiadzi, R., Bacaicoa-Barber, D., Cid-Sueiro, J., Perelló Nieto, M., Flach, P., & Santos-Rodriguez, R., **The Weak Supervision Landscape**. In 2022 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops) (pp. 218-223). IEEE Computer Society (Mar. 2022).
8. Bi, H., Perelló Nieto, M., Santos-Rodriguez, R., Flach, P., & Craddock, I., **An active semi-supervised deep learning model for human activity recognition**. Journal of Ambient Intelligence and Humanized Computing, 14(10), 13049-13065 (Mar 2022).
9. Bacaicoa-Barber, D., Perelló Nieto, M., Santos-Rodriguez, R. & Cid-Sueiro, J., **On the Selection of Loss Functions Under Known Weak Label Models**, In the International Conference on Artificial Neural Networks, p. 332-343. 12 p (Sep. 2021).
10. Bi, H, Perelló Nieto, M, Santos-Rodriguez, R & Flach, PA. **Human Activity Recognition Based on Dynamic Active Learning** IEEE Journal of Biomedical and Health Informatics (Apr. 2021).
11. Morgan, C. A. M., Heidarivinchek, F., Craddock, I., Mcconville, R., Perelló Nieto, M., Tonkin, E. L., Masullo, A., Vafeas, A. T., Kim, M., Mcnane, R., Tourte, G. J. L. & Whone, A. L., **Data labelling in the wild: annotating free-living activities and Parkinson's disease symptoms**, 2021 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events, PerCom Workshops). Institute of Electrical and Electronics Engineers (IEEE), p. 471-474 4 p. 9431017 (Mar. 2021).

12. Perelló Nieto, M., Santos-Rodriguez, R., Garcia-Garcia D., Cid-Sueiro, J. **Recycling weak labels for multi-class classification** Journal of Neurocomputing, Volume 400, pp. 206-215 (2020).
13. Holmes, M., Perelló Nieto, M., Song, H., Tonkin, E. L., Grant, S. & Flach, P. A., **Modelling patient behaviour using IoT sensor data: A case-study to evaluate techniques for modelling domestic behaviour in recovery from total hip replacement surgery** Journal of Healthcare Informatics Research, 3;4(3):238-260. doi: 10.1007/s41666-020-00072-6. PMID: 35415449; PMCID: PMC8982732 (May 2020)
14. Tonkin, E. L., Perelló Nieto, M., Bi, H. & Vafeas, A. T., **Towards a methodology for acceptance testing and validation of monitoring bodyworn devices**, 2020 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops). IEEE Computer Society, 6 p. Research output: Chapter in Book/Report/Conference proceeding › Conference Contribution, Conference Proceeding (Aug. 2020).
15. Kull, M., Perelló Nieto, M., Kängsepp, M., Silva Filho, T., Song, H., Flach, P. **Beyond temperature scaling: Obtaining well-calibrated multiclass probabilities with Dirichlet calibration**, In Advances in Neural Information Processing Systems, pp. 12295-12305 (2019).
16. Holmes, M., Song, H., Tonkin, E. L., Perelló Nieto, M., Grant, S. & Flach, P., **Analysis of patient domestic activity in recovery from hip or knee replacement surgery: modelling wrist-worn wearable RSSI and accelerometer data in the wild**, Proceedings of the 3rd International Workshop on Knowledge Discovery in Healthcare Data: co-located with the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI-ECAI 2018). CEUR Workshop Proceedings, p. 13-20 8 p., CEUR Workshop Proceedings; vol. 2148 (Jul 2018).
17. Diethe, T., Perelló Nieto, M., Tonkin, E., Holmes, M., Sokol, K., Twomey, N., Kull, M., Song, H. & Flach, P., **Releasing eHealth analytics into the wild: Lessons learnt from the SPHERE project**. KDD'18: Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. Association for Computing Machinery (ACM), pp. 243-252 (2018)
18. Perelló Nieto, M., Santos-Rodriguez, R. and Cid-Sueiro, J. **Adapting Supervised Classification Algorithms to Arbitrary Weak Label Scenarios**, in Advances in Intelligent Data Analysis XVI: 16th International Symposium, IDA 2017, London, UK, October 26–28, Proceedings. Springer Verlag, pp. 247-259 (2017)
19. Perelló Nieto, M., Silva Filho, T.M., Kull, M. & Flach, P., **Background Check: A general technique to build more reliable and versatile classifiers**, in IEEE 16th International Conference on Data Mining (ICDM2016), Barcelona, Spain (Dec. 2016).
20. Fuertes, J. M., Villà, R., Ayza, J., Mars, P., Martí, P., Velasco, M., Yezpez, J., Torres, G., & Perelló Nieto, M., **Hands-on Course in Networked Control Systems**, Spain. In 20th Mediterranean Conference on Control and Automation (MED2012), Barcelona, Spain (Aug. 2012).
21. Fuertes, J. M., Villà, R., Ayza, J., Mars, P., Martí, P., Velasco, M., Yezpez, J., Torres, G., & Perelló Nieto, M. **Design of a Hands-on Course in Networked Control Systems** XV Jornadas de Tiempo Real, Santander, Spain (Feb. 2012).

Other Publications

1. Clark, J.N., Wragg, M., Nielsen, E., Perelló Nieto, M., Keshtmand, N., Ambler, M., Sharma, S., Bourdeaux, C.P., Brigden, A., Santos-Rodriguez, R. **Exploring the Requirements of Clinicians for Explainable AI Decision Support Systems in Intensive Care**. arXiv preprint arXiv:2411.11774. (Nov. 2024)
2. Flach, P., Perelló Nieto, M., **PhD program, proposal for a joint TAILOR PhD curriculum Report**. Foundations of Trustworthy AI - Integrating Reasoning, Learning and Optimization (TAILOR) (Apr. 2023)
3. Perelló Nieto, M., **Uncertainty aware classification: Augmenting classifiers to handle uncertainty**. Ph.D. Student thesis, University of Bristol, Computer Science (May 2023).
4. Flach, P., Perelló Nieto, M., **AI-Driven Collaboration Tools Report**. Foundations of Trustworthy AI - Integrating Reasoning, Learning and Optimization (TAILOR) (Oct. 2022)
5. Diethe, T., Kull, M., Twomey, N., Sokol, K., Song, H., Perelló Nieto, M., Tonkin, E. & Flach, P. **HyperStream: a Workflow Engine for Streaming Data**, In : arXiv (Aug. 2019)
6. Perelló Nieto, M., **Merging chrominance and luminance in early, medium, and late fusion using Convolutional Neural Networks**. M.Sc. Student thesis. Aalto University, Master's Programme in Machine Learning and Data Mining (2015).

7. Fuertes, J. M., Villa, R., Ayza, J., Mares, P., Marti, P., Velasco, M., Yopez, J., Torres, G., & Perelló Nieto, M., **Design of a hands-on course in networked control systems**. Research report ESAII-RR-12-01, Automatic Control Department, <http://hdl.handle.net/2117/18144> (Jan. 2012)
8. Perelló Nieto, M. **Design of a platform to test distributed control systems**. B.Sc. Student thesis. Universitat Politècnica de Catalunya. Facultat d'Informàtica de Barcelona. Departament d'Enginyeria de Sistemes, Automàtica i Informàtica Industrial (ET d'Informàtica de Sistemes (Pla 2003)) (Jan. 2012).

Tutorials

1. Flach, P.A., Perelló Nieto, M., Song, H., Kull, M., de Menezes e Silva Filho, T. **Classifier Calibration: How to assess and improve classifier confidence and uncertainty**. Tutorial at the European Conference of Machine Learning and data mining conference (Sep. 2020).

Grants and awards

- (Pending decision) PI in a Community Innovator, LEAP DH Hub £10,000 2026
- (Pending decision) PI in a Community Innovator fu, LEAP DH Hub £10,000 2026
- (Pending decision) Co-I in a Community Innovator fu, LEAP DH Hub £10,000 2026
- (Pending decision) Co-I in a Medical Research Council Impact Acceleration Accounts £36,000 2025
- (Unsuccessful) Co-I in a UKRI Participatory Research Fund £8,989 2025
- (Unsuccessful) Co-I in a EBI and JGI' AI in Health Awards £14,197 2025
- (Unsuccessful) Co-I in a EBI and JGI' AI in Health Awards £16,979 2025
- Principal Investigator in a Early Career Pump Priming grant project £4,477 2025
- Co-Investigator in a Early Career Pump Priming grant project £4,500 2025
- Secured funding for the Digital Health Seminar Series £2,000 2024, 2025
- Co-designed and managed a €200,000 fund in the H2020 TAILOR project 2023, 2024
- Secured sponsorship from IBM for PyData Bristol (£300 per event) 2019
- Secured sponsorship from OVO Energy for PyData Bristol (venue for 100 people) 2018-2020
- Awarded an NVIDIA GPU Grant of \$3,000 (TITAN V) 2018

Teaching Experience

- Organised a workshop to demystify the use of AI in healthcare 2025
- Invited lecture in the unit ML and DM for Health Data Science, Bristol Medical School 2025
- Organised a workshop during the Festival of Digital Health, South West England and Wales 2025
- Co-organised a workshop Quarto Hands-on Workshop, UoB 2024
- Co-organised a workshop New Ways of Academic Publishing, UoB 2024
- Online demonstrator course Introduction to Optimal Decision Making 2024
- Online demonstrator course Classifier Calibration 2024
- Q&A Session in Machine Learning Paradigms, UoB 2023
- Invited talk in the unit Intro to AI, UoB 2020
- Invited lecture for the Digital Health CDT, UoB 2019
- Online teaching material on how to use the HPC Blue Crystal 2019
- Co-organised a Workshop about Digital Health for Year 9 students (Shape Your World - Future Quest) 2019
- Participation in a Digital Health exhibit at We The Curious 2018
- Online teaching material for Artificial Neural Networks 2015
- Online teaching material for Convolutional Neural Networks 2015
- Teaching material for Embedded Distributed Control Systems (YouTube playlist) 2011

Academic Supervision

- Co-supervision of 5 group projects in AI, Practice-Oriented AI CDT, UoB 2024, 2025, 2026
- Supervisor of an intern within the Health Data Research UK Black Internship Programme 2025
- Supervision of a final year project in M.Eng. Engineering Mathematics, UoB 2024
- Co-supervision of a final year project in M.Sc. Advanced Computing, UoB 2017
- Co-supervision of a final year project in M.Sc. Advanced Computing, UoB 2017
- Co-supervision of a final year project in B.Sc. Computer Science, UoB 2016
- Co-supervision of a final year project in B.Sc. Maths & Computer Science, UoB 2015

Peer Reviewing

- Program Committee member at ECML-PKDD 2020, 2023, 2024, 2025
- Reviewer for the Machine Learning journal, Springer Nature Link 2024, 2025
- Reviewer for the Data Science journal, Sage Journals 2025
- Reviewer for npj Artificial Intelligence journal, Springer Nature 2025
- Reviewer for the Journal of Artificial Intelligence Review, Springer Nature Link 2023, 2024
- Reviewer for the International Journal of Data Science and Analytics, Springer Nature Link 2024
- Reviewer for the Journal of Signal, Image and Video Processing, Springer Nature Link 2024
- Programme Committee member at the European Conference on Artificial Intelligence 2024
- Panel Observer for the EPSRC Impact Acceleration Accounts funding panel 2024
- Reviewer for the LEAP Hub project grant applications 2024
- Panel Observer for the LEAP Fellowships funding panel 2024
- Reviewer for Neurocomputing, ScienceDirect 2020, 2021, 2022, 2023
- Reviewer for the Journal of Knowledge and Information Systems, Springer Nature Link 2023
- Reviewer for the Royal Society Open Science, The Royal Society Publishing 2022
- Reviewer for the Journal of Visual Communication and Image Representation, ScienceDirect 2019, 2022
- Reviewer for the AAAI Workshop on AI Safety 2021

Other Academic and Volunteer Activities

- Collaboration with the Open City Research Lab at We The Curious 2025, 2026
- Co-organised the Digital Health Seminar Series, UoB 2025, 2026
- Invited speaker SEMT Early Career Researchers Pump Priming scheme 2026
- Co-organised the Festival of Digital Health, South West England and Wales 2025
- Organised colloquium Children as Co-Researchers: Designing Studies for and with the Next Generation 2025
- Co-organised the workshop Future Robots for Kids! (6 to 9 year-old) 2025
- Member of assessment panel for the LEAP Digital Health Community Innovators scheme 2025
- Organization of workshops, and chair of the AI in society session, 4th TAILOR Conference (Portugal) 2024
- Organization of a researchers matching activity, 3rd TAILOR Conference (Italy) 2023
- Organization of a team building activity, 2nd TAILOR Conference (Czech Republic) 2022
- Team building activity, Joint EurAI Advanced Course on AI and TAILOR Summer School (Spain) 2022
- Attended ACAI-TAILOR Summer School (Barcelona) 2022
- Speaker for the Jean Golden Institute, Data Week (Collecting Big Data from Family Homes) 2021
- Co-organiser of the first PyData Bristol Meetup 2017-2020

- Co-organised the Classifier Calibration tutorial at ECML-PKDD 2020
- Researcher volunteer CLAIRE COVID-19 initiative 2020
- Group facilitator at a Data Study Group (The Alan Turing Institute) 2019
- Awarded an NVIDIA GPU Grant (TITAN V) 2018
- Attended Machine Learning Summer School (Madrid) 2018
- SPHERE exhibit at We The Curious 2018
- Attended Amazon Research Days Cambridge 2018
- Bristol PLUS Award 2017

Open Source Contributions

- Shapley Compositions Python code 2024
- New Ways of Publishing: A Roadmap to Authoring Online Training Material 2024
- Python package PyCalib 2021
- Material, videos and workshops from PyData Bristol 2020
- Python package bHealth (Bristol Health) 2019
- Teaching material on how to use Blue Crystal phase 4 2019
- Python package PyDatasets 2018
- Python package dirichlet_python 2018
- Notes taking tool Diary 2017
- Python code for Precision Recall Gain curves 2016
- Teaching material for Artificial Neural Networks 2015
- Teaching material for Convolutional Neural Networks 2015
- Open Source Python library DiaryPy 2015
- Synthetic generator of OCR data 2015
- Python code DeepTrip (YouTube video) 2015
- Open Source Tetris for Arduino & 4Display-Shield (YouTube video) 2012
- Teaching material for Distributed Control Systems (YouTube Playlist) 2011