Curriculum Vitae – Prof. Jaume Bacardit – November 2023

Personal information

Full name: Jaume Bacardit Peñarroya	Nationality: British/Spanish
Year of birth: 1976	Email: jaume.bacardit@newcastle.ac.uk
Home page: http://homepages.cs.ncl.ac.uk/jaume.bacardit/	
Professor in Artificial Intelligence, School of Computing Science, Newcastle University	

Academic qualifications

- 2004 PhD in Computer Science. Ramon Llull University, Barcelona, Spain. Thesis title: "Pittsburgh Genetics-Based Machine Learning in the Data Mining Era: Representations, generalization, and run-time". Grade: Summa Cum Laude. Citations in Google Scholar: 118.
- 2000 MEng in Computer Engineering. Ramon Llull University, Barcelona, Spain. Grade: A
- 1998 BEng in Computer Engineering. Ramon Llull University, Barcelona, Spain. Grade: B+

Research and academic positions

- August 2023-onwards. Professor in Artificial Intelligence, Newcastle University.
- October 2021-September 2023. Fellow of the Alan Turing Institute
- August 2017-July 2023. Reader in Machine Learning at Newcastle University.
- January 2014-July 2017. Senior Lecturer in Biodata Mining at Newcastle University
- January 2008-December 2013. Lecturer in Bioinformatics at the University of Nottingham.
- March 2005-December 2007. Research Fellow at the University of Nottingham. Project: Robust Prediction with Explanatory Power for Protein Structure and Related Prediction Problems. Sponsor: Engineering and Physical Sciences Research Council of UK (grant GR/T07534/01)
- 2001-2005. PhD student at the Ramon Llull University, Spain. Project name: Analysis and design of reliability-enhancement techniques for automatic classification using Pittsburgh Genetic-Based Machine Learning. Sponsor: Catalan Regional Government (grant FI 2001 00514).

Funding track record (recent years)

- 2015: APPROACH: Applied Public-Private Research enabling OsteoArthritis Clinical Headway, CoI of the project. Fundign: EU-IMI (Innovative Medicine Initiative) (€15M)
- 2015: CRITiCaL - Combatting cRiminals In The Cloud. CoI of the project. Funding: EPSRC (£2M)
- 2016: Synthetic Portabolomics: Leading the way at the crossroads of the Digital and the Bio Economies, CI of the project, Funding: EPSRC (£4.3M)
- 2016: Knowledge Transfer Partnership with Orchard Information Systems Ltd. CoI of the project. Funding: Innovate UK (£140K)
- 2017: Knowledge Transfer Partnership with Rain Data Ltd. CoI of the project. Funding: Innovate UK (£132K)
- 2018: Development of strategies for extracting facial attribute knowledge from deep learning architectures on image data, EPSRC CASE studentship. Partner: Unilever R&D (£122K), PI.
- 2018: Knowledge Transfer Partnership with Engie UK. Funding: Innovate UK (£171K), PI.
- 2018: BRC Health data deep learning collaboration. Funding NIHR (£78K), CoI.
- 2019: Agriculture and Horticulture Development Board (AHDB) PhD studentship - £72K (PI)
- 2019: JADE: Joint Academic Data science Endeavour – 2. CoI. Funding: EPSRC (£5.5M)
- 2021: OCTAHEDRON : Optical Coherence Tomography Automated Heuristics for Early Diagnosis via Retina in Ophthalmology and Neurology. Role in project: CoI. Funder: NIHR (£128K)
- 2022: Implementation of an artificial intelligence module on the web-based digital platform MyoShare for guiding the diagnosis of muscle diseases. CoI. Funder: AFM-Telethon (£128K)
- 2022: Dissecting the cellular and molecular atlas of Rheumatoid Arthritis (RA) in sustained remission to identify pathways maintaining Remission and Triggering Flares. CoI. Funder: Foundation for Research in Rheumatology (€600K)
- 2023: OCTage: monitoring the ageing brain via Optical Coherence Tomography of the eyes. CoI. Funder: Medical Research Council (£320K)

Teaching and supervision

- **PhD supervisions:** Maria Franco (2009-2012), Anna Swan (2011-2014), Nicola Lazzarini (2013-2017), Ossama Alshabrawy (2017-2020), Jake Cowton (2017-2021), Artur Sakalouski (2017-2022), Yiming Huang (2018-2023), Jordan Connolly (2019-2023), Philip Drake (2019-), Christian Taylor (2019-), Conor Turner (2019-), Genevieve Moat (2021-), Knectt Lendoye L'Eyebe (2023-).

- **Posdoctoral supervision:** Xiaolei Xia (2010-2011), Pawel Widera (2015-2022), Bart Craenen (2016), Samuel Danso (2017), Stephen Matthews (2017-2018), Ali Alameer (2018-2020), Craig Sharp (2018-2020), Philip Jackson (2019-2020), Federico Angellini (2020-2021), Yiming Huang (2023-)
- **Teaching:** Machine Learning (2022-present), Biomedical Data Analytics and AI, (2022-present), Natural Computing and Biodesign (2021-present) Bioinformatics Theory and Practice (2014-2022), Biologically-Inspired Computing (2014-2021), Comparative and Evolutionary Genomics (2014), Unix Software and Tools (2013), Data Mining Techniques and Applications (2011-2013), Developments in Digital Business (2009), Computer Systems and Architecture (2009), Genetic Analysis and Bioinformatics (2009-2012), Operating Systems (2008).

Reviewing activities

- Member of the EPSRC peer review college and the BBSRC pool of experts
- Panel member for the French National Cancer Institute and the EU H2020-RISE-2020 call
- Grants reviewer for the Medical Research Council (MRC), Research Foundation Flanders (FWO), and the Swiss National Science Foundation (SNSF), Leverhulme Trust, Royal Society and the Chile's Superior Council of the National Fund for Scientific & Technological Development
- Editorial board member for Communications Biology (2020-2021), PeerJ Computer Science (2014-)
- Reviewer for 40+ journals and peer-reviewed conferences

Organisation of international conferences and summer schools

- Co-organiser, International Workshop on Evolutionary Computation and Explainable AI (ECXAI) since 2022.
- Proceedings Chair, 2019 Conference on Artificial Life (ALIFE-2019), Newcastle, upon Tyne, UK.
- Co-organiser, International Workshop on Learning Classifier Systems - IWLCS (2007-2011).
- Workshops chair. Genetic and Evolutionary Computation Conference (GECCO) in 2010 and 2011.
- Co-chair of the "Evolutionary Machine Learning" track, ACM Genetic and Evolutionary Computation Conference (GECCO) in 2009, 2013, 2014, 2020 and 2021.
- Co-organiser, Plant Bioinformatics, Systems and Synthetic Biology International Summer School, University of Nottingham, 2009

Awards and membership

- 2010: Best Ab-initio residue-residue contact prediction method of the 9th Community Wide Experiment on the Critical Assessment of Techniques for Protein Structure Prediction (CASP)
- 2007: Bronze medal in the 'Humies Awards'. This prize is awarded to Evolutionary Computation applications that manage to obtain human-competitive results of high relevance and impact.
- Member of the Association for Computing Machinery (ACM) since 2005
- Member of the ACM Special Interest Group in Evolutionary Computation (SIGEVO) since 2005
- Member of the International Society for Computational Biology (ISCB) since 2013

Invited Talks (recent years)

- **2023**, January, "Actionable Explainable AI in Biomedicine", invited talk, Erasmus Medical Centre, Rotterdam, Netherlands // June, ""Disease subtype identification and characterisation using Explainable AI from biochemical markers data", Teeside University, UK
- **2022**, May, "Actionable Explainable AI in Biomedicine", invited talk, Teeside University, UK.
- **2022,** March, "Introduction to Machine Learning", training course, Universidad Nacional de Tucuman, Argentina
- **2017**: June, "Inferring functional networks from rule-based machine learning models", invited seminar, School of Computer Science, University of Birmingham, UK
- **2015:** March, "The bi-directional feedback between big data mining and bioinformatics", invited seminar, School of Computing, University of Kent, Canterbury, UK **//** June 2015 "Machine Learning for Knowledge discovery from biological/biomedical data", University of Vic, Spain // July 2015 "Machine Learning for Knowledge discovery from omics/clinical OA data", University of Surrey

Recent publications (last five years)
Citations: 6608, H-index: 39 (01/11/2023; Google Scholar)
Complete list of publications: https://scholar.google.com/citations?user=-_5Ei5EAAAAJ

- Y. Huang et al. Transcriptional biomarker discovery toward building a load stress reporting system for engineered Escherichia coli strains. **Biotechnology and Bioengineering**, in press, 2023
- S. Iqbal et al. Deep learning identification of coronary artery disease from bilateral finger photoplethysmography sensing: A proof-of-concept study. **Biomedical Signal Processing and Control** (2023) 86, 104993
- P. Widera et al. Development and validation of a machine learning-supported strategy of patient selection for osteoarthritis clinical trials. **Osteoarthritis and Cartilage Open**, (2023) 100406
- S. Iqbal et al. Deep learning classification of systemic sclerosis from multi-site photoplethysmography signals. **Frontiers in Physiology** (2023) 14, 1242807
- Wang, Qiuke, et al. "A machine learning approach reveals features related to clinicians' diagnosis of clinically relevant knee osteoarthritis." **Rheumatology** 62.8 (2023): 2732-2739.
- M. Jansen et al. "Machine-learning predicted and actual 2-year structural progression in the IMI-APPROACH cohort." **Quantitative Imaging in Medicine and Surgery** 13.5 (2023): 3298.
- Taylor, Christian et al. "Estimating individual-level pig growth trajectories from group-level weight time series using machine learning." ***Computers and Electronics in Agriculture*** 208 (2023): 107790.
- Huang, Yiming, et al. "A knowledge integration strategy for the selection of a robust multi-stress biomarkers panel for Bacillus subtilis." ***Synthetic and Systems Biotechnology*** 8.1 (2023): 97-106.
- Wirth, Wolfgang, et al. "Test–retest precision and longitudinal cartilage thickness loss in the IMI-APPROACH cohort." ***Osteoarthritis and Cartilage*** 31.2 (2023): 238-248.
- van Helvoort, Eefje M., et al. "Predicted and actual 2-year structural and pain progression in the IMI-APPROACH knee osteoarthritis cohort." ***Rheumatology*** 62.1 (2023): 147-157.
- Sokolovsky, Artur, et al. "Interpretable trading pattern designed for machine learning applications." **Machine Learning with Applications** 11 (2023): 100448.
- Angelini, Federico, et al. "Osteoarthritis endotype discovery via clustering of biochemical marker data." ***Annals of the Rheumatic Diseases*** 81.5 (2022): 666-675.
- Roemer, Frank W., et al. "Structural tissue damage and 24-month progression of semi-quantitative MRI biomarkers of knee osteoarthritis in the IMI-APPROACH cohort." ***BMC Musculoskeletal Disorders*** 23.1 (2022): 1-20.
- Danesh, Hajar, et al. "Synthetic OCT Data Generation to Enhance the Performance of Diagnostic Models for Neurodegenerative Diseases." ***Translational Vision Science & Technology*** 11.10 (2022): 10-10.
- P. Darke et al. Curating a longitudinal research resource using linked primary care EHR data -- a UK Biobank case study. **J Am Med Inform Assoc** 29.3 (2022): 546-552.
- Taylor, Christian, Jonathan Guy, and Jaume Bacardit. "Prediction of growth in grower-finisher pigs using recurrent neural networks." ***Biosystems Engineering*** 220 (2022): 114-134.
- Bacardit, Jaume, et al. "The intersection of evolutionary computation and explainable AI." **Proceedings of the Genetic and Evolutionary Computation Conference Companion**. 2022.
- Walker, Daniel, et al. "Insight from data analytics in a facilities management company." **Quality and Reliability Engineering International** 38.3 (2022): 1416-1440.
- B. Little et al. "Deep learning-based automated speech detection as a marker of social functioning in late-life depression." ***Psychological medicine*** *51 (9), 1441-1450, 2021*

- E.M. van Helvoort et al. Baseline clinical characteristics of predicted structural and pain progressors in the IMI-APPROACH knee OA cohort. **RMD open** 7 (3), e001759, 2021
- L. Jardine et al. Blood and immune development in human fetal bone marrow and Down syndrome. **Nature** 598 (7880), 327-331, 2021.
- E. Stephenson et al. Single-cell multi-omics analysis of the immune response in COVID-19 **Nature medicine** 27 (5), 904-916
- Reynolds, Gary, et al. "Developmental cell programs are co-opted in inflammatory skin disease." ***Science*** 371.6527 (2021): eaba6500.
- Huang, Yiming, et al. "Computational strategies for the identification of a transcriptional biomarker panel to sense cellular growth states in bacillus subtilis." ***Sensors*** 21.7 (2021): 2436.
- Rajgor, Amarkumar Dhirajlal, et al. "The application of radiomics in laryngeal cancer." **The British Journal of Radiology** 94.1128 (2021): 20210499.
- Sokolovsky, Artur, Thomas Gross, and Jaume Bacardit. "Is it feasible to detect FLOSS version release events from textual messages? A case study on Stack Overflow." **Plos one** 16.2 (2021): e0246464.
- Lam, Benjamin, et al. "Using wearable activity trackers to predict type 2 diabetes: machine learning–based cross-sectional study of the UK Biobank accelerometer cohort." **JMIR diabetes** 6.1 (2021): e23364.
- Alameer, Ali, Ilias Kyriazakis, and Jaume Bacardit. "Automated recognition of postures and drinking behaviour for the detection of compromised health in pigs." ***Scientific reports*** 10.1 (2020): 1-15.
- van Helvoort, Eefje M., et al. "Cohort profile: the applied public-private research enabling osteoarthritis clinical Headway (IMI-APPROACH) study: a 2-year, European, cohort study to describe, validate and predict phenotypes of osteoarthritis using clinical, imaging and biochemical markers." ***BMJ open*** 10.7 (2020): e035101.
- Widera, Paweł, et al. "Multi-classifier prediction of knee osteoarthritis progression from incomplete imbalanced longitudinal data." ***Scientific Reports*** 10.1 (2020): 1-15.
- Alameer, Ali, et al. "Automatic recognition of feeding and foraging behaviour in pigs using deep learning." ***Biosystems engineering*** 197 (2020): 91-104.
- Franco, Maria A., Natalio Krasnogor, and Jaume Bacardit. "Automatic tuning of rule-based evolutionary machine learning via problem structure identification." **IEEE Computational Intelligence Magazine** 15.3 (2020): 28-46.
- Smith, Wayne S., et al. "Insight from data analytics with an automotive aftermarket SME." **Quality and Reliability Engineering International** 35.5 (2019): 1396-1407.
- Cowton, Jake, Ilias Kyriazakis, and Jaume Bacardit. "Automated individual pig localisation, tracking and behaviour metric extraction using deep learning." **IEEE Access** 7 (2019): 108049-108060.
- Fellermann, Harold, et al. "Towards low-carbon conferencing: Acceptance of virtual conferencing solutions and other sustainability measures in the alife community." **Artificial Life Conference Proceedings**. MIT Press, 2019.
- Popescu, Dorin-Mirel, et al. "Decoding human fetal liver haematopoiesis." ***Nature*** 574.7778 (2019): 365-371.