PROJECT TITLE
Opportunistic constraint-aware continual machine learning

PROJECT SUMMARY
The undertaken research work is part of an EU project called ExtremeXP (Experiment driven and user experience-oriented analytics for extremely precise outcomes and decisions) under the direction of Prof Hamid Bouchachia. The project will develop scenario-driven and opportunistic machine learning with the aim to (1) design and develop AutoML mechanisms for performing scenario-based algorithm and model selection considering on-demand user-provided constraints (data, performance, resources, time, model options), (2) devise mechanisms for continual learning in algorithm and model selection: as new data sets become available, the so-far learned selection strategies are continuously adapted.   We are seeking to fill the position with a talented and enthusiastic PhD holder with excellent analytical, programming, communication and scientific writing skills, who will contribute to the delivery of the project (planning, designing and conducting the proposed research and producing published outputs). Candidates must have strong analytical background in Machine Learning preferably with good exposure to Meta-learning, Continual Learning, AutoML, Scalable ML and Trustworthy AI. The project will target new and original ML algorithms and strategies leading to exploitable constraint-aware ML and analytics services.

ACADEMIC IMPACT
The position will target multi-fold academic impact pathways: (1) Scientific progress - advancing the area of constraint-aware ML, (2) Scientific output – The project is scientifically challenging thus results are expected to be published in high-impact journals; (3) Collaborating (& networking) – The candidate will collaborate with researchers from BU and with other 17 EU partners from academia and industry; (4) Dissemination of the results - presenting the conducted work to the consortium and essentially to the ML community in scientific conferences and workshops.

SOCIETAL IMPACT
The work will be deliverable with some applications in mind as it is driven by a number of real-world use cases/problems proposed by our industry partners (flood forecasting, public protection and disaster relief, transportation, cybersecurity). Thus, the outcome of the project (consisting of algorithms, techniques and methods). will be validated for such different types of applications and will potentially be adopted/exploited by the use cases providers.

PGR DEVELOPMENT OPPORTUNITIES
This project offers a very interesting learning and training opportunity for the candidate. Different subjects are involved in the project like machine learning (various topics), pattern recognition, knowledge engineering, etc. Issues like project planning and management will also be learned. The candidate will have the opportunity to interact with local and international researchers and will be expected to attend international conferences to present the project's results. The candidate will also gain experience from interacting with the industry partners in the consortium to understand real-world problems. Moreover, in the short term the outcome of the research might be taught for Bachelor and Master students at BU, thus the candidate might be involved in teaching activities. Last but not least, the candidate will take advantage of the various training opportunities offered by BU to enhance their professional development and employability.

SUPERVISORY TEAM

First Supervisor	Prof Hamid Bouchachia
Additional Supervisors	Dr Avleen Malhi
Recent publications by supervisors relevant to this project	Please see the profile of the supervisors here: Professor Hamid Bouchachia - Bournemouth University Staff Profile Pages Dr Avleen Malhi - Bournemouth University Staff Profile Pages

INFORMAL ENQUIRIES

Please contact the lead supervisor on the following email for informal enquiries: abouchachia@bournemouth.ac.uk

ELIGIBILITY CRITERIA

The BU PhD and MRes Studentships are open to UK, EU and International students.

Candidates for a PhD Studentship should demonstrate outstanding qualities and be motivated to complete a PhD in 3 years and must demonstrate:

- outstanding academic potential as measured normally by either a 1st class honours degree (or equivalent Grade Point Average (GPA) or a Master's degree with distinction or equivalent in relevant subjects: computer science (Data science & AI), Mathematics, Physics and Engineering.

- an IELTS (Academic) score of 6.5 minimum (with a minimum 6.0 in each component, or equivalent) for candidates for whom English is not their first language and this must be evidenced at point of application. Note that this step is not required if you have already completed any studies in UK.

ADDITIONAL ELIGIBILITY CRITERIA

HOW TO APPLY

Please complete the online application form by 17/04/2023

Further information on the application process can be found at: www.bournemouth.ac.uk/studentships