Alessio **Petrozziello**, PhD

Senior Manager of Data & Machine Learning Science - Honorary Senior Research Fellow

✉ alessio92p@gmail.com ⌂ alessiopetrozziello.github.io 🔗 alessiopetrozziello

◎ London, United Kingdom

I'm a Data Scientist and a Researcher. Currently I work as Senior Manager of Data & Machine Learning Science at Expedia Group, one of the leading online travel companies. I also hold an Honorary Senior Research Fellow position at the University College London (UCL). Before that, I have been a Visiting Researcher at the University of Oxford, a Teaching Assistant at the University of Portsmouth, and a co-founder member of the Geoinformatics and Earth Observation Laboratory at the Penn State University. My studies include a PhD in Computational Intelligence and a BSc (Hons) in Computer Science. I have more than 15 peer-reviewed scientific publications in journals and international conferences.

I am interested in Machine Learning (ML), with a particular focus on the Recommendation Systems and the Optimization fields. I specialize in building complex Distributed ML Frameworks & Pipelines, solving business needs at scale through custom ML solutions (from prototypes to fully fledged production-ready models). Moreover I have experience in working in the areas of Learn-to-Rank, Deep Learning and Time Series Forecasting.

Current Roles

Senior Manager of Data & Machine Learning Science, Expedia Group, London, UK   09.2020–Present
I currently lead the "User Relevance, Intent and Personalization" team which is part of the Expedia Group AI & Data Science (i.e., Core Data Science). The teams focus on the integration of Machine Learning techniques in the Ranking, Recommender Systems and Time Series forecasting spaces. My main responsibilities include: Line-managing, coaching and upskilling a team of nine people (6 Senior DS and 3 DS); Providing subject-matter expertise related to data science and machine learning models implementation and productionization; Collaborating with product and engineering teams to make the user experience machine learning driven; Leading the R&D efforts across Expedia Group in the area of Learn-To-Rank; Planning the team roadmap and participating in the product roadmap.
→ Keywords: Machine Learning, Learn-To-Rank, Recommender Systems, Scala, Python, Keras, TensorFlow, Spark, Roadmap planning, Tech Talent Recruitment, Coaching

Honorary Senior Research Fellow, University College London (UCL), London, UK   11.2019–Present
I have been Awarded the Honorary Senior Research Fellow status by UCL. This is alongside my current role at Expedia Group. In this role I co-supervise 2 PhD students and I co-authored 1 conference paper and 3 journal papers.
→ Keywords: Research, Machine Learning, Software Development Effort Estimation, Distributed Systems, Evolutionary Computation, Latex, Statistics.

Past Experience

Senior Data Scientist, Machine Learning, Expedia Group, London, UK   11.2019–09.2020
As a Senior Data Scientist I worked in the Expedia Group AI & Data Science team (i.e., Core Data Science). My main focus was on the integration of new machine learning techniques in the Ranking and Recommendation space. I collaborated with product and engineering teams in the design and development of the Machine Learning frameworks required for training and deploying models on the live environment. I also led the R&D effort across Hotels.com (brand Expedia Group) in the area of Learn-To-Rank.
→ Key Technologies: Machine Learning, Recommender Systems, Learn-To-Rank, Scala, Python, Java, R, Keras, TensorFlow, Spark, SQL, Hive, Hadoop, Statistics, A/B testing.

Data Scientist, Machine Learning, Expedia Group, London, UK   10.2017–11.2019
As a Data Scientist I worked in the Hotels.com Data Science team (brand Expedia). The key responsibilities of my role included developing Machine Learning models to rank the properties on the company's website (with a focus on missing data and cold start problems), creating complex data pipelines with Spark (500gb+ daily processed data) and designing and running complex A/B-tests.
→ Keywords: Machine learning, Recommender Systems, Big Data Exploratory Analysis, Spark, Hive, Keras, Tensorflow, AWS, Scala, Python, R, A/B testing.

Intern Data Scientist, Machine Learning, Expedia Group, London, UK   06.2017–10.2017

Visiting Researcher, University of Oxford, Oxford, UK   01.2018–12.2018

Teaching Assistant, University of Portsmouth, Portsmouth, UK   09.2015–05.2018

Intern Data Scientist, Machine Learning, Expedia Group, London, UK   06.2016–10.2016

Research Assistant, Penn State University, Pennsylvania, US   02.2014–05.2014

Education

Ph.D. in Computational Intelligence, University of Portsmouth, UK   2015–2019
Thesis: Supervised Machine Learning Methods for Complex Data

B.Sc. (Hons) in Computer Science, University of Salerno, Italy   2011–2014

Skills

Data Science – Machine Learning, Recommender Systems, Learn-to-Rank, Deep Learning, Time Series Forecasting, Statistics.

Management – Roadmap Planning, Coaching, Talent Recruitment, Stakeholder management, Projects Prioritization

Data Tools – Spark, Keras, TensorFlow, Prototyping Notebooks.

Languages – Scala, Python, R, SQL.

Big Data Systems – Spark, Hive, Hadoop.

Database Systems – SparkSQL, MySQL.

Technologies – AWS, Git, Bash.

Publications

A scale invariant ranking function for learning-to-rank: a real-world use case   2021
A. Petrozziello, X. Liu and C. Sommeregger (arXiv)

Multi-Objective Software Effort Estimation: A Replication Study   2021
V. Tawosi, F. Sarro, A. Petrozziello and M. Harman (IEEE TSE)

Learning From Mistakes: Machine Learning Enhanced Human Expert Effort Estimates   2020
F. Sarro, R. Moussa, A. Petrozziello and M. Harman (IEEE TSE)

MOEA-DPF: A Novel Approach to Distribute Pareto Front Computation   2020
F. Sarro, A. Petrozziello, D. He and S. Yoo (GECCO'20)

Multimodal Convolutional Neural Networks to detect fetal compromise during labor and delivery   2019
A. Petrozziello, I. Jordanov, A.T. Papageorghiou, et. al. (IEEE Access)

Automated Deep Learning for Threat Detection in Luggage from X-ray Images   2019
A. Petrozziello and I. Jordanov (SEA'19)

Feature Based Multivariate Data Imputation   2018
A. Petrozziello and I. Jordanov (LOD'18)

Linear Programming as a Baseline for Software Effort Estimation   2018
F. Sarro and A. Petrozziello (ACM TOSEM)

Deep Learning for Continuous Electronic Fetal Monitoring in Labor   2018
A. Petrozziello, I. Jordanov, A.T. Papageorghiou, et. al. (EMBC'18)

Distributed Neural Networks for Missing Big Data Imputation   2018
A. Petrozziello, C. Sommeregger and I. Jordanov (IJCNN'18)

Classifiers accuracy improvement based on missing data imputation   2018
I. Jordanov, N. Petrov, and A. Petrozziello (Journal of AISCR)

Source Reconstruction of Atmospheric Releases with Limited Meteorological Observations Using Genetic Algorithms   2017
A. Petrozziello, G. Cervone, P. Franzese, et. al. (Journal of AAI)

Data Analytics for Online Traveling Recommendation System: A Case Study   2017
A. Petrozziello and I. Jordanov (IASTED MIC'17)

Column-wise Guided Data Imputation A. Petrozziello and I. Jordanov (ICCS'17)	2017
Multi-Objective Software Effort Estimation F. Sarro, A. Petrozziello, and M. Harman (ACM ICSE'16)	2016
Supervised Radar Signal Classification I. Jordanov, N. Petrov, and A. Petrozziello (IJCNN'16)	2016

Awards, Fellowships & Grants

Improving Applicability of Nature-Inspired Optimisation (Travel Grant) European Cooperation in Science and Technology (COST)	2019
Improving Applicability of Nature-Inspired Optimisation (Travel Grant) European Cooperation in Science and Technology (COST)	2017
AWS Credits for Research Award Amazon Web Services (AWS)	2017
Azure for Research Award: Data Science & Machine Learning Microsoft	2015–2017
Bronze Medal - 13th Annual "Humies" Awards For Human-Competitive Results Genetic and Evolutionary Computation Conference (GECCO'16)	2016
Three years full-time Ph.D. Scholarship University of Portsmouth	2015
Erasmus+ Traineeship Scholarship University of Salerno	2015
The young scientist Award The Italian Cultural Society of Washington, D.C., inc.	2014
International Summer School on Software Engineering, ISSSE'14 (Travel Grant) University College London	2014
Messaggeri della Conoscenza Scholarship (one semester at the Penn State University) Italian Ministry of Education (MIUR)	2013

Memberships & Collaborations

Member of the Software Optimisation, Learning and Analytics Research (SOLAR) University College London (UCL)	2019–Present
Collaborator of the Centre for Research on Evolution, Search and testing (CREST) University College London (UCL)	2016–Present
Member of the Big Data Institute University of Oxford	2018
Co-Founding member of the "Geoinformatics and Earth Observation Laboratory" Penn State University	2014