Accenture
Applied Intelligence Data Scientist
TIN-ACC-013

About the Organisation

Are you excited by using data to develop scientific and analytical solutions to solve business problems? Our Data Scientists work with leading organisations to transform data into valuable, actionable insights using advanced machine learning methods.

The Data and AI revolution is changing everything. It's everywhere – transforming how we work and play. Join Accenture and help transform leading organisations and communities around the world. Accenture Applied Intelligence is driving these exciting changes and bringing them to life across 40 industries in more than 120 countries. The sheer scale of our capabilities and client engagements and the way we collaborate with the ecosystem, operate and deliver value provides an unparalleled opportunity to grow and advance.

Accenture's Applied Intelligence practice covers the range of Data and AI skills, from Strategy, Data Science, Data Architecture, AI Engineering and Visual Insights. When combined with Accenture's broader Strategy and Consulting practice, we are able to bring together the unique ability to drive end to end business change through the application of Data and AI.

At the forefront of the industry, you'll create, own and make it a reality for clients looking to better serve their connected customers and operate always-on enterprises. We are not just focused on increasing revenues – our technologies and innovations are making millions of lives easier and more comfortable. Join us and become an integral part of our Applied Intelligence team with the credibility, expertise and insight clients depend on. There will never be a typical day at Accenture, but that's why people love it here. You will be working with famous brands and household names – no worrying about how to explain what you do to your family again!

This is an exciting opportunity to be part of 675,000 employees across the globe.

Role Description and Responsibilities

The person appointed to this role will work on the following:

- Solving challenging business problems using advanced machine learning methods such as Deep Learning and quantitative analytics.
- Cleaning, aggregating, and interpreting data in preparation for analysis.
- Partnering with developers and engineers to deploy machine learning algorithms to deliver business value.
- Defining approaches to embed and scale machine learning models.
- Building reusable assets, solutions and developing best practices for current and future business problems.

- Consulting on complex analyses and advanced machine learning methods.

Expected Outcomes

The person appointed to this role will gain hands-on experience of real-world implementation of data science solutions and how machine learning models can be used to create tangible benefits for our clients. The precise outcome will depend on the skills and experience of the appointed person, which will in turn determine the exact scope of the project to be undertaken.

Supervision and Mentorship

This role will be supervised by, and report into Accenture's UK Applied Intelligence Data Science Practice Lead, Dr Gilbert Cassar.

Ideal Intern

Our ideal intern has the following attributes:

- Practical experience in coding languages eg. Python, R, Scala, etc.; (Python preferred)
- Knowledge of machine learning modelling techniques and how to fine-tune those models eg. XGBoost, Deep Neural Networks, Transformers, Markov chains, etc.;
- Experience using specialized machine learning libraries eg. Fastai, Keras, Tensorflow, pytorch, sci-kit learn, huggingface, etc.;
- Must demonstrate the capacity of reading, understanding and implementing new techniques in the field of machine learning as they emerge.
- Strong verbal/written communication & data presentation skills.
- Ability to pause their PhD for the duration of the internship and to return to their studies upon completion.

Internship Logistics

This internship will be based in Accenture's UK HQ in Fenchurch Street, London.

The start date is expected to be September 2022, although this date is negotiable.

The duration will be 6 months.

The remuneration will be pro-rated based on an equivalent annual salary of £33.5k.

This is a full-time position, and we regret that we are unable to consider part-time applications.

The Alan Turing Institute

Accenture
Deep Learning for Drug Discovery
TIN-ACC-014

About the Organisation

Accenture Labs are Accenture's dedicated arm of research and development.
We are focused on solving critical business problems with advanced technology, bringing fresh insights and innovations to our clients, helping them capitalize on dramatic changes in technology, business and society. Our dedicated team of technologists and researchers work with leaders across the company to invest in, incubate and deliver breakthrough ideas and solutions that help our clients create new sources of business advantage.
At Accenture Labs Dublin, based at The Dock, we focus on Artificial Intelligence technologies and systems like explainable AI, knowledge discovery and computational creativity applied to business areas as diverse as healthcare, life science, workforce, supply chain and consumer products.

Role Description and Responsibilities

Project Title: Deep generative networks for data scarcity and privacy

Analysis Methods: Deep learning, Machine learning, Language Models

Data Source: Publicly available data sets. Internal private data sets.

Deep generative networks are widely used in many subfields of AI and Machine Learning. More recently generative models using deep learning have been employed in a creative manner to generate new media (images, text and music) but they have also been applied to areas such as drug discovery (especially small molecules) and data synthesis for privacy. While large language models have had a big impact on speech recognition, machine translation, part-of-speech tagging they have not been applied widely to drug discovery.

Despite the progress deep learning methods have made in drug discovery there are still several challenges one of which is the computational prediction of interactions between drugs and targets. When drug discovery is focused on peptides or proteins (rather than just small molecules) there is the challenge of a lack of labelled information to train models. Treating peptides and protein sequences as text may allow for large language models to potentially have impact in this domain. More recently, deep learning methods have been used to gain insights on the interplay between small molecules and genetic perturbations that allow for the prediction of effective drug combinations to fight complex diseases. This highlights the potential of building generative networks that combine several sources of related information, e.g., drug compounds and gene expression.

The research intern will join a team working on deep learning for drug discovery. They will be responsible for designing, implementing, and evaluating novel principled ways to tackle one or more research problems listed above, with the ultimate goal of discovering more useful drug candidates. The intern is expected to explore and experiment with a range of techniques from prior art, propose original research, and implement ideas that will be validated with the research team in Accenture Labs Dublin.

Turing Research Mapping

Research themes & scientific expertise

Machine learning: Deep learning; Applications.

Scientific Problem Areas

Missingness: Understanding to analyse incomplete datasets.

Expected Outcomes

The research intern will work with AI researchers to select and develop models with an application for drug discovery.

Expected deliverable: To create a prototype and a publication submission to a major academic conference.

Broader objectives: To create techniques that can discover potential drug candidates and predict their characteristics and potential interactions.

Supervision and Mentorship

This role will be supervised by, and report into Dr Jerimiah (Jer) Hayes, Technology R&D Principal in Accenture Labs.

Ideal Intern

The key requirements we are looking for in the ideal candidate are:

• Strong academic background in machine learning/deep learning methodology, especially with deep generative networks;

• Strong proficiency in at least one programming language, ideally Python, and relevant toolboxes: Scikit-Learn, Tensorflow, Keras.

• Strong proficiency in working with software version control, e.g., Git.

• Interest in solving real-world scientific problems and in acquiring commercial awareness

• Demonstrable experience of performing well both when working part of a team and individually

• Ability to pause your PhD for the duration of the internship and return subsequently

Internship Logistics

This internship will be based in Accenture, Dublin - The Dock, 7 Hanover Quay. The internship

will not be remote and requires relocation to Dublin, Ireland.

The start date is expected to be September 2022, although this date is negotiable.

The duration will be 6 months.

The remuneration will be pro-rated, based on an equivalent annual salary of €40k.

This is a full-time position, and we regret that we are unable to consider part-time applications.

Accenture
Graph Machine Learning for Healthcare
TIN-ACC-015

About the Organisation

Accenture Labs are Accenture's dedicated arm of research and development.
We are focused on solving critical business problems with advanced technology, bringing fresh insights and innovations to our clients, helping them capitalize on dramatic changes in technology, business and society. Our dedicated team of technologists and researchers work with leaders across the company to invest in, incubate and deliver breakthrough ideas and solutions that help our clients create new sources of business advantage.
At Accenture Labs Dublin, based at The Dock, we focus on Artificial Intelligence technologies and systems like explainable AI, knowledge discovery and computational creativity applied to business areas as diverse as healthcare, life science, workforce, supply chain and consumer products.

Role Description and Responsibilities

Project Title: Graph Machine Learning for Healthcare

Analysis Methods: Deep Learning, Knowledge Graphs, Graph Machine Learning

Broader Objectives: Design graph machine learning models to infer complex relations from biomedical knowledge graphs.

Data Sources: Accenture's large dataset of structured real-world clinical records. Publicly available datasets on population-level multi-omics data (genomic, biological pathways, diseases, drugs, etc).

Recent advances such as Graph Neural Networks and Knowledge Graph Embeddings have been used successfully to predict missing, unseen edges in large graph databases [1,2,3]. Accenture Labs adopt them in client projects for drug discovery, oncology decision-support, and clinical research hypothesis verification.

Despite an excellent trade-off between predictive power and scalability, many aspects of these architectures are still under research scrutiny. Graph machine learning research directions include supporting multi-hop complex reasoning, time-awareness, learning in an incremental fashion or with few examples, leveraging multi-modal data, ensuring human interpretability, uncertainty quantification, just to name a few [5,6]. An area of significant interest is the interplay with large (biomedical) language models, to refine output generation with the help of structured graph information.

The research intern will join a precision medicine project and will be in charge of designing,

implementing, and evaluating novel principled ways to tackle one or more research problems listed above, with the ultimate goal of inferring knowledge from incomplete clinical and genomic knowledge graphs. The intern is expected to explore and experiment with a range of techniques from prior art, propose original research, and implement ideas that will be validated with the research team in Accenture Labs Dublin.

Expected Outcomes

Expected outcomes: Software prototype, technical report, submission to major AI academic conference (open publication policy), opportunity to contribute to our open-sourced graph machine learning library [4].

[1] https://kge-tutorial-ecai2020.github.io/

[2] https://www.cs.mcgill.ca/~wlh/grl_book/

[3] https://arxiv.org/abs/2004.14843

[4] https://github.com/Accenture/AmpliGraph

[5] https://arxiv.org/abs/2012.05876

[6] https://arxiv.org/abs/2011.03459

Supervision and Mentorship

On-site supervision by Luca Costabello and other members of the research team in Accenture Labs Dublin.

Ideal Intern

The key requirements we are looking for in the ideal candidate are:

• Strong academic background in machine learning/deep learning methodology, especially with deep generative networks.

• Strong proficiency in at least one programming language, ideally Python, and relevant toolboxes: Scikit-Learn, Tensorflow, Keras.

• Strong proficiency in working with software version control, e.g., Git.

• Interest in solving real-world scientific problems and in acquiring commercial awareness

• Demonstrable experience of performing well both when working part of a team and individually

• Ability to pause your PhD for the duration of the internship and return subsequently

We invite applicants to include in the application form any relevant links to illustrate programming experience (e.g. GitHub handle) and scientific accomplishments (e.g. Google Scholar, dblp, arXiv links, personal homepage).

Internship Logistics

Turing Internship Network – Spring 2022

This internship will be based in Accenture, Dublin - The Dock, 7 Hanover Quay. The internship will not be remote and requires relocation to Dublin, Ireland.

The start date is expected to be September 2022, although this date is negotiable.

The duration will be 6 months.

The remuneration will be pro-rated, based on an equivalent annual salary of €40k.

This is a full-time position, and we regret that we are unable to consider part-time applications.

The Alan Turing Institute

Accenture
Responsible AI (RAI)
TIN-ACC-016

About the Organisation

Accenture's Responsible AI practice sits within the wider multidisciplinary Applied Intelligence team of experts across a range of academic and industry backgrounds. Join us to help transform leading organisations and communities around the world.
Accenture is driving these exciting changes and bringing them to life across 40 industries in more than 120 countries. The sheer scale of our capabilities and client engagements and the way we collaborate, operate, and deliver value provides an unparalleled opportunity to grow and advance.

Role Description and Responsibilities

The advances in artificial intelligence, machine learning and use of data are creating unprecedented opportunities for society and our clients to benefit. The transformation has already begun with AI driving much of our day to day lives, and we expect the rate of innovation in AI to only accelerate. The positive opportunities AI affords also contrast with significant risks that can arise from the inappropriate use of AI. It is critical to understand the range of harms and risks to citizens and society from AI, and to develop approaches that allow AI technologies to be used responsibly, ethically, and lawfully. The Responsible AI group in Accenture is leading Accenture's efforts to ensure all AI development and use is Responsible by design. Our goal is to ensure citizens, our clients, regulators, and practitioners can benefit from Accenture's expertise in making being Responsible simple.

We are seeking a passionate advocate for responsible approaches to AI development and use, and we are providing an opportunity for you to explore and develop approaches to address some of the most critical challenges. You will be motivated by the opportunity to co-design a research goal within the field of responsible AI that helps advance knowledge and application of responsible by design.

You will also have fantastic opportunities to support a range of ongoing Accenture efforts in responsible AI. This may include working with clients who have engaged Accenture to help them with their responsible AI journey or working with our data science and AI engineering teams to develop models and frameworks for example.

Intern Responsibilities:

- Develop and deliver an action orientated research proposal
- Support wider responsible AI activity within Accenture as directed

Expected Outcomes

The outcome of the internship will depend on the subject being addressed within the internship and for which we invite you to suggest possible projects as part of your application. Please see the details below:

We invite applicants to use the dedicated question for this role on the application form to outline your proposal for an action-orientated, 6-month, research project within the field of Responsible AI. This can be technical, non-technical or at the intersection of these two.

Your proposal should be outcome and practically focused and structured to ensure a short phase of research can be followed with the development of tools, prototypes, frameworks, artifacts that can be used to advance the cause of responsible AI

Some suggested areas you might explore are listed below, but you should not be constrained by these suggestions if you can advocate for the link to responsible AI

Technical:

- Assess and respond to the challenge of privacy erosion through explainable AI models, considering the issues with model inversion attacks
- Assess and respond to the harms and concerns from large language models.
- Evaluation of technical methodologies for bias and discrimination assessment

Policy:

- What are the challenges and approaches to including representation from vulnerable and impacted groups in the design of AI systems and their outcomes?
- How might we assess and develop a risk framework for contextual and subjective harms within AI systems?

Regulatory:

- What are the common areas of AI risk and harm management between different legislative frameworks such as the GDPR, draft EU AIA, DSA? How might we develop a common framework for addressing cross-regulatory requirements in relation to AI?

Supervision and Mentorship

This role will be supervised by, and report into Accenture's European Lead for Responsible AIi Shah.

Ideal Intern

The Ideal Intern will have:

- A demonstrable passion for responsible AI
- Be undertaking a PhD in a subject or research group considering technical, social, legal, or ethical issues with AI
- Ability to pause their PhD for the duration of the internship and to return to their studies upon completion

Turing Internship Network – Spring 2022

Internship Logistics

This internship will be based in Accenture's UK HQ in Fenchurch Street, London.

The start date will be September 2022 and the duration will be 6 months.

The remuneration will be pro-rated based on an equivalent annual salary of £33.5k.

This is a full-time position, and we regret that we are unable to consider part-time applications.

Accenture
Modelling of the Lloyds of London Market Using Digital Twins
TIN-ACC-017

About the Organisation

Accenture is a global leader in the provision of technology consultancy services to clients. We cover a vast array of technologies and industries – ranging from robotics to cloud, financial services through to healthcare – you name it, and we almost certainly have a team providing cutting-edge support to clients in this space.

Accenture's Applied Intelligence practice covers the range of Data and AI skills, from Strategy, Data Science, Data Architecture, AI Engineering and Visual Insights. When combined with Accenture's broader Strategy and Consulting practice, we bring together the unique ability to drive end to end business change through the application of Data and AI.

We're not just focused on increasing revenues – our technologies and innovations are making millions of lives better and more comfortable for everyone. Join us and become an integral part of our Applied Intelligence team with the credibility, expertise and insight clients depend on. There will never be a typical day at Accenture, but that's why people love it here.

Role Description and Responsibilities

Digital Twins are one of the key outcomes from the AI revolution. This hugely important technology is being applied in an ever-increasing number of areas, and the ability to simulate, explore and optimise complex systems in digital form is rapidly placing the approach at the heart of many organisations' technology strategy. The ability to explore the internal dynamics of a complex system (such as a process, network or supply chain, for example) is fascinating, powerful and cost-efficient in equal measure. Commercially, of course, it makes far more sense to experiment with a digital replica of a system than to try the same for real and risk bringing down business-critical activity.

The Opportunity

We are seeking **two people** with previous experience in Digital Twin technologies and Agent-Based Models to join an exciting project we are launching to model an extremely complex system – namely the Lloyds of London insurance market.

Lloyd's is the world's leading insurance (and reinsurance) market providing specialist insurance services to businesses in over 200 countries and territories. It operates as a partially-mutualised marketplace within which multiple financial backers, grouped in syndicates, come together to pool and spread risk. These underwriters, or "members", are a collection of both corporations and private individuals, the latter being traditionally known as "Names". In 2020 there were 76 syndicates managed by 50 managing agencies that collectively wrote £35.5bn of gross premiums on risks placed by 350 brokers. Of those

premiums 53 per cent emanated from North America, 27 per cent from Europe and 20 per cent from the rest of the world.

We think it fair to say, therefore, that the Lloyds market falls cleanly within the definition of a complex system. Building a digital twin of this market is clearly a huge task – but don't worry, we're not expecting the successful applicants for this role to be doing all that work! We're looking for people with a passion for AI, a strong background in Reinforcement Learning, working with time-series data and agent-based modelling to undertake the preliminary literature study and supporting research and to build initial concept sub-models of the market, so that we can expand on this work as the project evolves.

You will also have fantastic opportunities to learn from some of the best in this space in Accenture and to work with our partner client, an insurance specialist and member of the Lloyds market.

Expected Outcomes

The successful applicants for this position will be responsible for the following:

- Undertaking and documenting a detailed desk-study/literature search of previous work in this field, developing a critique of the relative merits of different approaches, and formulating clear recommendations for the best approach(es) for us to take going forward.
- To build prototype models of key elements of the market to illustrate the proof of concept and feasibility of the overall task. The models you will build will be determined by the findings of the research outlined above as well as in discussion with Accenture and client stakeholders.

Supervision and Mentorship

This role will be supervised by, and report into Accenture's Senior Manager for Insurance Markets, Kieran Lesforis.

Ideal Intern

Key requirements are:

• Strong academic background in machine learning/deep learning methodology, especially in Reinforcement Learning and agent-based modelling

• Strong proficiency in at least one programming language, ideally Python, and relevant toolboxes: Scikit-Learn, Tensorflow, Keras.

• Strong proficiency in working with software version control, e.g., Git.

• Interest in solving real-world scientific problems and in acquiring commercial awareness

• Demonstrable experience of performing well both when working part of a team and individually

• Ability to pause your PhD for the duration of the internship and return subsequently

Turing Internship Network – Fall 2022

Internship Logistics

This internship will be based in Accenture's UK HQ in Fenchurch Street, London.

The start date is expected to be August or September 2022.

The duration will be 6 months.

The remuneration will be pro-rated based on an equivalent annual salary of £33.5k.

This is a full-time position, and we regret that we are unable to consider part-time applications.