

RESOURCING/

JOB DESCRIPTION:

Machine Learning KTP Associate



Ref Number:	NATS-206-23
Salary Scale:	Up to £50,000 per annum
Contract:	Fixed term for 24 months, full-time
School/Department:	Divisions of Natural Sciences (NATS) and Computing, Engineering and Mathematical Sciences (CEMS)
Location:	TMLEP, Ashford, TN23 1FB (adjacent to Ashford International railway station)
Responsible to¹:	Business Partner Supervisor (Chief Information Officer) or their nominee; Knowledge Base Supervisor (Academic at UoK) or their nominee
Expected start date:	Spring or Summer 2023

The Role

- Do you have an interest in machine learning and artificial intelligence?
- Do you want to apply these methods to important and valuable data and have genuine impact?
- Do you want to gain experience of working in both business and academic environments?

This two-year project is about identifying and classifying legal and medical documents. You will develop and identify new machine learning and statistical algorithms to do this. You will be based in a company, TMLEP in Ashford, but work closely with Prof. Philippe De Wilde and Dr. James Bentham of the University of Kent. They have research experience at top UK universities and a track record of successful postdocs.

This is an excellent opportunity for somebody with a PhD in machine learning or statistical learning to do impactful work and prepare for a career in academia or business. You will have the opportunity to publish. You will belong to the academic community at the University of Kent as well as the business community at TMLEP. You do not need to have worked at a company but must have an interest in impact of research via business. The development environment is Python-based, and your specific challenges will be to:

- Use machine learning methods to create a ground-breaking new product that will be able read medical records and 'stamp' them with dates. While this might sound

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Line Manager may be subject to change and will be confirmed in the employment contract issued to the successful candidate.

Created:

Updated:



straightforward, the records include very messy data, and the work will require the use of cutting-edge methods to reach acceptable accuracy.

- You will then develop an algorithm to 'read' medical reports using natural language processing and machine learning methods, categorising them automatically into risk categories.

You will be based in TMLEP's offices next to Ashford International station. Ashford as well as the University of Kent, at Canterbury, are within easy reach of London, and you will have the opportunity to maintain and develop links with researchers at universities and businesses in London.

TMLEP is a pioneering independent clinical practice, providing clinical investigations, analytics and HealthTech solutions to healthcare providers, insurers, lawyers, and regulators across the globe with the clear aim of ensuring healthcare standards and patient safety are improved. Clinical negligence claims are brought frequently against healthcare providers, but documentation can be complex and messy, so there is a unique opportunity to work with TMLEP and engage with significant technical challenges. Your work will provide considerable cost savings to TMLEP and give them a key commercial advantage, as well as being technically interesting to academics.

Prof Philippe De Wilde has several decades of experience in artificial intelligence, including research on deep learning algorithms with many practical implementations. Dr James Bentham is an applied statistician with substantial experience of natural language processing and machine learning methods, and their application to health-related data. Although you will be embedded within TMLEP, you will also have close support and guidance from Prof De Wilde and Dr Bentham. Most supervision will take place at TMLEP's offices, but you will also have opportunities to travel to the University of Kent and other locations, in particular to attend conferences and exhibitions.

At the end of the fixed term contract, and upon successful completion of the project, there is a possibility that the role could become a permanent full-time position.

We particularly welcome applications from female and black, Asian and minority ethnic candidates as they are under-represented at this level in this area.

Key Duties

- Date recognition:
 - Assessing the problem, gathering data and initial data transformation.
 - Applying machine learning methods that will identify date fields in documents as images.
 - Development and testing of date recognition software, including a user interface.
 - Production of documentation and providing training within TMLEP.
 - Writing a research paper to describe the findings.
- Classification of reports into risk categories:
 - Data collation, assessment and preprocessing.
 - Development of a numerical model of text-based data.
 - Review and feedback within TMLEP and to academics.
 - Applying machine learning methods for classification.
 - Software development with documentation and training materials.
 - Writing a research paper and attending conferences.
- Completion of a final KTP report.

Other duties commensurate with the grading of the post may be assigned by the Chief Information Officer at TMLEP or their nominee.

Internal & External Relationships

Internal: You will be based at TMLEP's premises in Ashford. You will work closely with the Client Relations and Business Development Teams to guarantee that the outcomes of the work fit business needs, and to ensure that market opportunities are fully exploited. You will liaise on a regular basis with the Knowledge Base team at the University of Kent mainly through meetings and email, but also via video-conferencing, talks or other means.

External: You will interact from time to time with clients, as well as with other academics and professional at conferences and other meetings. This will be valuable in adding to your own network of contacts.

Knowledge Transfer Partnerships

This position is part funded by Innovate UK under the Knowledge Transfer Partnership (KTP) programme. KTP projects are based on a partnership between a University and a company or organisation with a recently qualified graduate or post-graduate (the Associate), delivering the project with support from the academic team within the University. For this KTP you will be working with the University of Kent experts in the project area.

As the Associate, you will benefit from a generous training and personal development programme. You will also be encouraged to attain membership of a professional organisation and funding support, if appropriate, may be available towards study for a higher degree. More information about KTPs and the many benefits of being a KTP Associate can be found on the KTP website at www.gov.uk/guidance/knowledge-transfer-partnerships-what-they-are-and-how-to-apply.

Health, Safety & Wellbeing Considerations

This role involves undertaking duties which include the Health, Safety and wellbeing issues outlined below. Please be aware of these, when considering your suitability for the role.

- Regular use of Display Screen Equipment

Person Specification

The Person Specification details the necessary skills, qualifications, experience or other attributes needed to carry out the job. Please be aware that your application will be measured against the criteria published below.

Selection panels will be looking for clear evidence and examples in your application, or in your cover letter where applicable, which back-up any assertions you make in relation to each criterion.

Qualifications / Training	Essential	Desirable	Assessed via*
PhD (or close to completion) or equivalent qualification or experience in Machine Learning, Data Science (incl. Statistics), or Artificial Intelligence (incl. Machine Learning).	✓		A

Experience / Knowledge	Essential	Desirable	Assessed via*
Experience in conducting research relevant to the project and in writing reports.		✓	A, I, T
Familiarity with version control mechanisms to keep track of software development progress.		✓	A, I
Recent track record of publication in leading international journals or conferences in an area relevant to machine learning.		✓	A
Previous placement experience of working in business.		✓	A, I

Skills / Abilities	Essential	Desirable	Assessed via*
Python	✓		A, I, T
Excellent inter-personal and communication skills, to work within teams and with a variety of people at different levels of seniority	✓		A, I
Familiarity with the cloud for data storage and machine learning algorithms.		✓	A, I
Familiarity with at least one of TensorFlow/Keras/Pytorch machine learning frameworks.		✓	A, I

Flexible problem-solving skills to develop solutions to improve business performance		✓	A, I, T
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Additional Attributes	Essential	Desirable	Assessed via*
Enthusiasm and excitement about the KTP project and working with industry	✓		A, I
Leadership attributes, being prepared to take control of all aspects of the KTP project throughout its duration	✓		A, I

***Criterion to be assessed via:**

- A** = application form or CV/cover letter
I = interview questions
T = test or presentation at interview