Senior machine learning/data analyst

Role brief

Directorate	Digital futures
Base location	Bristol, London or Manchester
Grade	*B*
Job level	*17*
Job family	IT software development and databases
Date	January 2017
Reports to	Director of technology and analytics

1. Background

Jisc is the UK higher education, further education and skills sectors' not-for-profit organisation for digital services and solutions. We champion the importance and potential of digital technologies for UK education and research, to support the UK in becoming the most digitally advanced education and research nation in the world.

To achieve our vision Jisc has undergone and continues to undergo a period of considerable change; looking to new challenges to make improvements to digital technologies for UK education and research.

This is a new role, initially supporting Jisc's new national learning analytics project. Jisc is developing a new national service, using big data techniques. A key element of this is predicative learning analytics, using millions of rows of data in standard formats to predict student success.

The infrastructure for this service is in place, based on the Hadoop ecosystem, and Jisc is currently working with third parties for the machine learning elements. Data has also been collected, meaning the successful candidate will be able start working on models immediately.

2. Purpose and scope

The prime purpose of this role is to provide in-house expertise in the development of machine learning algorithms, initially for learning analytics.

Initially this will be to develop and enhance new machine learning algorithms for Jisc's learning analytics, based on the Hadoop ecosystem. Over time we expect this to expand to other areas around learning and research.

The post will sit within the technology and analytics team, part of our digital futures directorate, with targets set by director of technology and analytics.

3. Key accountabilities and role outputs

Responsibilities will be expected to be developed and finalised over time and will include but will not be restricted to:

- Under the instruction of the director of technology and analytics contribute to the development of machine learning algorithms and techniques
- To develop visualisation based on a wide range of data sets
- To take the lead role in developing a road map of machine leaning and big data analysis

- To supervise contractors and other junior staff
- To take a part in project management processes, based around Scrum
- To contribute to project documentation, and document code to agreed standards

4. Skills, knowledge and experience

	Essential	Desirable
Qualifications	• A good degree and/or professional qualification	
Experience	• Demonstrable expertise in a number of the big data techniques such as - Supervised learning techniques - Ensemble learning (eg random forests, gradient boosting) - Bayesian methods (eg Niave Bayes) - Clustering (eg K-means, expectation maximisation) - Support vector machines - Decision tree based algorithms (eg C4.5/5.0, CART) - Regression based (e.g. logistic regression, step-wise regression) • Experience of a range of machine learning tools such as Numpy, Scikit-learn, relevant R packages • Experience of visualisation tools • Experience in applying technology to solve business problems, either in the education and research sector or in other sectors • Experience of formal technical project management methodologies (preferable Agile) and source control solutions (eg git)	• Experience in document store databases such as MongoDB, including aggregation querying • Experience in Hadoop and Spark. • Experience of visualisation tools such as Tableau • Experience of visualisation frameworks such as D3
Knowledge	• Expert knowledge of Python and/or R	• Understanding of formal testing methodologies, including unit tests
Skills	• Excellent oral and written communication skills • Excellent inter-personal skills • An ability to act and work independently and as an effective and enthusiastic team member	

5. Key contacts

- Chief innovation officer
- Jisc leadership team members and teams
- Data and analytics teams in HESA and QAA
- Higher education/further education stakeholders
- Customer and sector representatives at all levels
- Jisc partners and collaborators including commercial providers

Important additional information

The director of technology and analytics will discuss all elements of the role brief with the appointee on appointment and after six months, recognising that some elements may need changing.

The above is provided for guidance, is not contractual, and is not an exhaustive list of all accountabilities that the post holder may have.