Introduction to Data Science and AI in Insurance

Overview

- Number of hours: 30 (across 10 weeks)
- Number of modules: 6
- Mode of delivery: 6 x online, group tutorials, 1 x 1:1 session each

Overarching learning aims

On completion of the course, the delegates will be able to:

- Explain core concepts and methods in data science and AI within insurance
- Identify opportunities to apply data-science driven business solutions
- Gather, process, analyse, visualise and communicate insight from novel, large and heterogeneous datasets
- Perform basic analysis of relevant datasets with state-of-the-art tools and technologies in the insurance context
- Provide insights about the legal, ethical and technical implications of using big data and AI in an insurance context.

Each module will contain specific learning outcomes, which are in turn mapped against the overarching learning aims. The course includes technical exercises which will allow participants to work through practical examples using data science tools. There will also be additional, non-assessed technical exercises that will also allow participants to test out some techniques that may interest them personally.

Southampton Data Science Academy
Presented by the Web Science Institute at the University of Southampton

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Syllabus

Module 1: Introduction to Data Science, Data Management and Processing

Introductory module on the concept and processes of Data Science, as well as what to do with the data before you begin to extract insights from it.

Module 2: Data and Methods of Analysis for insights generation

In this module we focus on a range of data analysis approaches, including using statistics and machine learning techniques to extract insights.

Module 3: Data Visualisation and communication

In Module 3, we focus on visualising data and the insights that arise from visualisation techniques. You will discover the various ways in which particular types of data can be displayed in order to highlight a key finding and improve the impact of your reports.

Module 4: Further Analysis and Artificial Intelligence

In Module 4, we explore the most common Artificial Intelligence methods, and how these can be applied in real life insurance businesses to maximise the potential of our data.

Module 5: Application of Data Science techniques in Insurance

In Module 5, we focus on the considerations when carrying out a Data Science related project in an insurance context. This includes the Professional Standards within the industry and some of the key issues with respect to Data Science.

Module 6: Ethical implications and the future

In this module we highlight some of the most important considerations in carrying out a Data Science related project, with an emphasis on the ethical and legal aspects of data handling, including privacy, anonymity and data protection.

Assessment

The course will have two forms of assessment: a final assignment (80% of the total mark) and a set of discussion forum contributions (20% of the final mark).

Final assignment

- Percentage to final mark: (80%)
- Number of tasks: 3 (data pre-processing, data analysis & visualisation, proposal for transformative project)
- Word count: 1,500

Discussion forum contributions

Discussion Board 1 – Problem solving with data

5 Points

- Share an example of an application of data science to solve a problem in your field. Share your links by posting in the discussion. You might want to reflect on the outcomes of the data science application, good or bad, and a short note on why you shared it.
- Look at other participants' comments. If you can relate to a comment someone else has made, leave a reply.
- Deadline for participation: End of week 2.

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Discussion Board 2 – Identifying bias in data collection

5 Points

- Think of a data set that you are familiar with. What might bias the data collection and cleaning process? Why do you think this matters? Do you have any solutions? Include any links that you think are helpful.
- Look at other participants' comments. If you can relate to a comment someone else has made, leave a reply.
- Deadline for participation: End of week 4.

Discussion Board 3 – Identifying ethical implications of using big data

5 Points

- Share an example of a deceptive statistical analysis. Why were the statistics misleading? What can companies do to make their AI processes transparent?
- Look at other participants' comments. If you can relate to a comment someone else has made, leave a reply.
- Deadline for participation: End of week 6.

Discussion Board 4 – Applying AI solutions to real problems

5 Points

- Using one of the algorithms from Module 4, what insurance problem do you think that might solve? What data would you need? What would success look like? Share your ideas by posting in the discussion.
- Look at other participants' comments. If you can relate to a comment someone else has made, leave a reply.
- Deadline for participation: End of week 8.