AI / Machine Learning Course Outline

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2017 Curriculum

Delivery

Duration	3 days
Format	Face-to-face
Lecture time	16 hours
Lab time	8 hours

Plus two days of optional additional topics

Outcomes

This course is designed to help technical staff (hands-on consultants and pre-sales staff):

- Recognise when a customer has a problem where machine learning or other AI techniques might be a suitable solution

- Develop an intuition for what problems are solvable with current technology; what problems are easy and difficult to solve

- Have some hands-on experience with the most common techniques in AI and machine learning

- Establish a path for their own future self learning

Outline

Day 1 Morning

- Introduction to common tools and notebooks
- Unsupervised learning using k-means and dbscan
- Lab: identifying distinct groups of customers based on their purchases

Day 1 Afternoon

- Supervised learning: introduction to classifiers using K-nearest neighbours
- Lab: identifying fraudulent transactions
- Logistic regression and decision trees
- Lab: optimising when to perform preventative vehicle maintenance

Day 2 Morning

- Supervised learning: regression
- Theil-Sen, RANSAC and OLS
- Lab: how much global warming can we expect?

Day 2 Afternoon

- Recommendation systems
- Network analysis
- Lab: suggest a product for a user returning to an e-commerce store

Day 3 Morning

- Useful techniques: cross-validation
- Ensembling and decision forests
- Scaling
- Lab: pricing equities

Day 3 Afternoon

- Practical AI: natural language processing
- Sentiment analysis, named entities
- Lab: finding out what customers are complaining about in customer feedback surveys

Outline (additional topics)

Subject to change

Day 4

- Neural networks and deep learning
- Lab: is that a cat?
- Recurrent neural networks
- Lab: cleaning up hand-writing

Day 5

- Computer vision
- Edge detection
- Lab: counting outputs from the rubber factory
- Lab: real estate analysis with google maps
- Analysing motion
- Lab: where did the truck go?