AI kickstart for developers

Target audience

Experienced developers who want theory and practice within AI and Machine Learning

Purpose

Understanding and working with Artificial Intelligence from a developer perspective

Course duration

32 hours split into 4 days via 8 modules during 2 weeks

1 Introduction to AI and tools

2 Unsupervised learning

3 Supervised learning and data preparation

4 Modelling choice

5 Ensemble learning and explaining

6 Forecasting and time series data

7 Deep learning and unstructured data

8 NLP and working with text

This course is part of Svenska AI-akademin, a collaboration between Eicorn AB and Tenfifty AB and our partners. Our ambition is to increase knowledge and thereby the use of AI applications in Swedish companies, gaining competitive advantages towards the rest of the world. https://ai-akademin.se/for-utvecklare/

TENFIFTY
TAILORED AI SOLUTIONS

Module 1

Introduction to AI and tools

Week 1, day 1

Subject

› Overview of AI and machine learning

› Where can we use it in practice?

› The most common tools for working with tabular data: Python, JupyterLab, numpy, Pandas and matplotlib

› All modules have theory before noon and practice in the afternoon

Goal - After completing the module you should

› Have a better feel for where AI can be used

› Be comfortable with loading and transforming data in Python

Module 2

Unsupervised learning

Week 1, day 1

Subject

› An introduction Scikit-learn

› The first step is always to look at the data

› What can we find out about a dataset?

› Clustering and dimensionality reduction

Goal - After completing the module you should

› Know the first steps of machine learning

› Have ways to visualize data

› Know how to simplify data

› Be able to use your first unsupervised learning technique

Module 3

Supervised learning and data preparation

Week 1, day 2

Subject

› How can we use machine learning to predict numbers and classes?

› How do we prepare our dataset and do feature engineering?

› Balanced and unbalanced data sets

Goal - After completing the module you should

› Be able to run your first supervised learning models

› Use machine learning in practice on your first real data sets

› Know what to do when you have few examples of a class

Module 4

Modelling choice

Week 1, day 2

Subject

› How do we choose the right model?

› Degrees of freedom and dataset correlation

› Decision trees, neural networks, logistic regression, linear models and other methods

› How can we test and maybe cross-validate our solution?

Goal - After completing the module you should

› Know the weaknesses and strengths of various models

› Be able to choose model type based on parameters like amount of data and data type

› Know that successful ML hinges on not overfitting

› Have tools to avoid overfitting

Module 5

Ensemble learning and explaining

Week 2, day 1

Subject

› Combining models for best results

› Bagging, boosting and stacking

› How do we explain the model?

› Uncertainty in answers

Goal - After completing the module you should

› Know how to make your models more robust

› Know how to give your models extra precision

› Trust your models more, by asking:

  › What do you think?

  › Why?

  › How certain are you?

Module 6

Forecasting and time series data

Week 2, day 1

Subject

› In practice, company data is full of time series

› How can we incorporate seasonality, trends, holidays and other information?

› How do we incorporate time series in supervised learning?

Goal - After completing the module you should

› Know the difference between predicting and forecasting

› Have a starting understanding of how we work with priors when there is not enough data

› Have a better understanding of how to work with unstructured data

Module 7

Deep learning and unstructured data

Week 2, day 2

Subject

› How can we use deep neural networks to do feature engineering for us, on non-tabular data?

› How can we work with images?

Goal - After completing the module you should

› The basics of the hottest method right now - deep learning

› How to predict based on image data

› How to use a GPU for more intense calculations

Module 8

NLP and working with text

Week 2, day 2

Subject

› Most companies under-utilize their text data

› How can we convert text to numbers and use it alongside other features to do unsupervised and supervised learning?

Goal - After completing the module you should

› Know the easiest methods for analyzing text

› Know the best libraries for text processing

› How we can use the deep learning methods from the previous block for text analysis

Course instructor

Peter Fendrich

Peter has very long experience as both leader, developer and instructor from many different IT areas, primarily within Volvo. Already in the early 1990s, he joined and led the Volvo Artificial Intelligence team that developed a number of AI systems. Most recently, Peter worked as an advisor to the Board on future IT.

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