

Online Course „ Machine Learning with Python for Actuaries”

Dates:

9.00 – 11.00, all Tuesday mornings in May 2024

Overview:

Amidst the hype around AI and large language models, it is important to remember that most machine learning models used in insurance are based on tabular data. If you're an actuary looking to get started with machine learning in Python, this 4-block course is for you.

Purpose and Nature:

The course aims to introduce participants to machine learning with Python, starting with linear models and the standard workflows for selecting and comparing models. From there, we will move on to tree-based models such as random forests and boosted trees, and finally to deep neural networks. We will work with typical data science packages such as Pandas, Scikit-Learn, XGBoost, and TensorFlow.

The course is practical, consisting of four two-hour presentations where techniques are introduced and explained. After the presentations, you will work independently on the exercises to gain experience.

The content of the course is based on the material at https://github.com/mayer79/ml_lecture.

Prerequisites:

- Experience in working with data and statistical modelling; basic Python programming.
- Participants are responsible for ensuring that Python and the packages listed on https://github.com/mayer79/ml_lecture are installed on their laptops.
- The course is restricted to members of the SAV.

Topics:

1. Basics and Linear Models
 - a. Basics
 - b. Linear regression
 - c. Generalized Linear Model
2. Model Selection and Validation
3. Trees
 - a. Decision trees
 - b. Random forests
 - c. Gradient boosting (XGBoost, LightGBM)
4. Neural Nets

Language:

The language of the block course will be English.

Venue:

Online course.

Lecturer's CV :

Michael Mayer works as non-life pricing actuary at La Mobilière and holds a Ph.D. in Mathematical Statistics from the University of Bern (2008). Before he joined La Mobilière in 2018, he worked as biostatistician at the Swiss Group for Clinical Cancer Research, pricing actuary at Allianz Suisse, statistics lecturer at University of Bern, and consultant at Consult AG Bern. Michael is member of the data science working group of the Swiss Association of Actuaries. Furthermore, he is lecturer in “Responsible ML with Insurance Applications” at ETH Zürich.

Course Fee and Registration:

- CHF 300.-
- Registration deadline: 17th April 2024
- [Registration Link](#)

Number of Participants:

Min: 10, Max: 30

CPDs:

For members of the SAV, 8 CPDs for the full course are provided. If the exercises are done, then up to 8 additional CPDs can be granted based on a self-declaration.

Coordination and Contact:

SAV Geschäftsstelle
Holger Walz (Geschäftsführer)
sekretariat@actuaries.ch

Programme:

Tuesday, 7th May 2024

09.00 – 11.00 Basics and Linear Models

Tuesday, 14th May 2024

09.00 – 11.00 Model Selection and Validation

Tuesday, 21th May 2024

09.00 – 11.00 Trees

Tuesday, 28th May 2024

09.00 – 11.00 Neural Nets

The exercises for every topic need to be done after the lecture hours listed above, requiring additional 4-8 hours.