



The EUROPEAN SUPERVISOR EDUCATION INITIATIVE (ESE)

presents the web-based workshop on

“MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE FOR FINANCIAL SUPERVISORS”

via WebEx from 16 – 18 March 2022

OBJECTIVES

In supervision, the analysis of large amounts of data and the development of risk models are of crucial importance. The workshop “Machine Learning and Artificial Intelligence for Financial Supervisors” is designed to acquaint supervisors with the implications and limitations of the technology based on a hands-on learning experience. Participants experience a (virtual) multiple-day bootcamp with the aim to gain insights into the main building blocks underlying artificial intelligence (AI) applications. The programme includes introductory e-learning on AI, neural networks and provides ample opportunity to interact with the trainer/s as well as participants from other European central banks and authorities.

TARGET GROUP

The course is intended for experts from central banks and supervisory authorities. In order to succeed in this workshop, it is strongly recommended to have a basic to intermediate level in programming for the hands-on exercises and group work in class, specifically: Participants should have first experiences working with Python and/or R.

FORMAT

Presentations, Q&A, assignments, group work, e-learning / educational videos (accessible prior and after the workshop)

TRAINERS

Experts from academia, NCAs and a Fintech start-up.

REGISTRATION

Participation Fee: 650 Euro

Registration Deadline: Wednesday, 23 February 2021

Please register via the ESE website: <https://www.e-se-initiative.org/e-se-en/trainings/online-registration>

Confirmations and the link for participation will be sent after the registration deadline. Free cancellation is possible until the registration deadline elapses. Invoices will be issued by the ESE Secretariat after the training.

The web seminar will be delivered via WebEx.

WEB SEMINAR ORGANISATION

ESE Secretariat at Deutsche Bundesbank,

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EUROPEAN SUPERVISOR EDUCATION INITIATIVE

ESE Web Training

“MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE FOR FINANCIAL SUPERVISORS”

PROGRAMME

Wednesday, 16 March 2022

- 08.30 – 09.00 **Welcome**
ESE representative
TechQuartier, Patrice Pogorelik & Lucas Schmitt
- 09.00 – 10.30 **Session I:**
“Intro: Machine Learning vs. Econometrics”
- Intuition to use ML applications Predictions vs. mechanisms
 - Problems, Biases, and Implications
- Dr. Kevin Bauer*
- 10.30 – 10.45 **Break**
- 10.45 – 12.15 **Session II:**
“Data Preparation for Machine Learning” (incl. tasks for participants)
- Workshop Setup: Pandas and Matplotlib
 - Machine Learning – Data Preparation (incl. Assignment #1)
- Dr. Kevin Bauer*
- 12.15 – 12.30 **Break**
- 12.30 – 13.30 **Session III: Expert’s presentation**
- Konrad Richter, OeNB, Principal Supervisor -
Supervision Policy, Regulation and Strategy Division*
- 13.30 – 13.35 **Wrap-up day 1**



Thursday, 17 March 2022

08.45 – 09.00 Discussion of Assignment

Dr. Kevin Bauer

09.00 – 10.30 Session IV:
Technology Deep Dive (Part I) –Neural Networks

- The application of neural networks
- Neural networks in supervision

Dr. Kevin Bauer

10.30 – 10.45 Break

10.45 – 12.15 Session V:
“Technology Deep Dive (Part II) –Deep Neural Nets &
Convolutional Nets”

- Convolutional Networks
- Backpropagation and Overfitting
- Danger and Limits

Dr. Kevin Bauer

12.15 – 12.30 Break

12.30 – 13.30 Session VI: Expert’s presentation

*Christian Schmidt, Senior Expert, Deutsche Bundesbank
Banking Supervision Department, Division of On-site
Inspections and Implementation of International
Standards*

13.30 – 13.35 Wrap-up day 2



Friday, 18 March 2022

08.45 – 09.00 Discussion of Assignment

Dr. Kevin Bauer

09.00 – 11.00 **Session VII:**
Technology Deep Dive (Part III) – Neural Networks and SHAP Explainability

- Neural Networks for Classification and Regression
- SHAP explanations

Dr. Kevin Bauer

11.00 – 11.15 Break

11.15 – 12.00 **Session VIII:**
Startup Insight Session and Q&A

- “Real-Life example on the application of Artificial Intelligence in the context of supervision and banking”

TBD, Startup C-Suite representative – start-up with proven record on applying AI in the market and with a context to supervision

12.00 – 12.05 Break

12.05 – 12.45 **Open Discussion on the Implications of Artificial Intelligence in the context of Supervision**

Dr. Kevin Bauer

12.45 – 13.00 **Wrap-up, closing remarks and feedback**

TechQuartier (Patrice Pogorelik)



Preparatory E-Learnings / Online Courses (2 weeks prior and 1 month after the workshop)

Course 1 **Introduction Course – Artificial Intelligence**

- AI – A general purpose technology
- What is AI – From the origins until today
- AI – Problems, Biases and Implications

Course 2 **Prediction Machines**

- Perceptron's and Neural Networks
- Backpropagation and Overfitting
- Convolutional Networks
- Danger and Limits