# EUROPEAN INSTITUTE FOR ACADEMIC AND PROFESSIONAL DEVELOPMENT

*Creating Space for You to Grow*

## Your Course: **Machine Learning with Python**

*Unlock the secrets of machine learning in the heart of Berlin! This immersive course not only equips you with Python mastery and AI toolkits but also offers a rich blend of hands-on exercises, peer feedback, and networking opportunities in Europe's tech capital.*



| General Information: | |
|---|---|
| Date | 23 - 27 September 2024 (Monday till Friday) |
| Teaching units | 11 x 90 min |
| Location | Garda Lake/Italy |
| Price | 695 € + VAT |
| Minimum-Maximum Number of Participants | 14 |
| Accomodation | not included / self organised *(with EIAPD support)* |
| Your trainer | Dr. Alexander Britz |

## Course Description

Discover the future of technology. Master the fundamentals of **Machine Learning with Python**, all set within the great landscape of Lake Garda. Over the span of this course you will familiarize yourself with the core Python libraries for machine learning, including Scikit-Learn and PyTorch. Next to these, you will learn good coding practice, e.g. using version control with Git & Github and working in virtual environments. The course is highly interactive and features a balanced mix of input lectures and hand-on exercises. You will further learn how to exploit AI-based tools to autonomously troubleshoot and advance your coding skills. The course culminates in starting your own machine learning project, either with your personal data or using a free and online available data set. Besides learning the technical skills, you will network with Python and Machine Learning enthusiasts from all over Europe and enjoy the beautiful landscapes of Lake Garda.

| Objectives of the mobility | |
|---|---|
| | • Understand the capabilities of Python for machine learning<br>• Establish good coding practice, e.g. with version control and using virtual environments<br>• Master the well established Python libraries PyTorch |

Further information
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|---|---|
| | and Scikit-Learn<br>● Acquire a feeling of effectiveness in solving problems and advancing your skills on your own<br>● Apply the newly acquired skills and start your own machine learning project |
| **Added value of the mobility** (in the context of the modernisation and internationalisation strategies of the institutions involved) | Participants will be …<br>● confident in using Python and therefore be able to adapt to future needs in coding in different (academic) contexts .<br>● able to develop further on their own and thus adapt to future changes.<br>● acting as multipliers and share their acquired knowledge in their institution. |
| **Activities** | The course will be highly interactive and is split **50/50** into **lectures and exercises**.<br>● Exercises: You will work in (small) groups on coding tasks and explore them in depth.<br>● Peer exchange: You will meet, discuss and exchange with other young, aspiring Python programmers.<br>● Lecture and presentation by instructor: Lecture scripts will be handed out to all participants.<br><br>Additionally you will have the opportunity to …<br>● Experience Lake Garda and it's beautiful surroundings<br>● Network and exchange with colleagues from other European universities. EIAPD will facilitate a session to identify possibilities for further cooperation among participants. |
| **Learning outcome and impact** | After the course you will be able to …<br>● understand of the real-world uses of Python in machine learning and artificial intelligence<br>● maintain version control with Git&Github and use virtual environments<br>● build your own first machine learning models<br>● exploit AI-based tools and traditional internet research to advance your programming skills |
| **Target Group and Prerequisites** | ● Anyone keen on learning machine learning with Python<br>● You should have prior experience with Python, e.g., |

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| | |
|---|---|
| | using the commonly used libraries NumPy, Matplotlib or Pandas |
| | ● You will bring your own laptop to work with |

**Your Destination: Northern Lake Garda, Italy (Riva del Garda/Arco)**

Garda Trentino, located at the northern tip of Lake Garda, with  Riva del Garda, Arco and Torbole, offers an exceptional blend of breathtaking natural landscapes, vibrant cultural experiences, and a wide array of outdoor activities, making it a compelling destination for an Erasmus program. With the majestic mountains and the crystal-clear Lake Garda, the region is a picturesque setting that combines natural beauty with a rich historical tapestry.

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| Monday<br>23 September | Tuesday<br>24 September | Wednesday<br>25 September | Thursday<br>26 September | Friday<br>27 September |
|---|---|---|---|---|
| 09.00-12.15 | 09.00-12.15 | | 09.00-12.15 | 09.00-12.15 |
| - Welcome & Intro of Trainer and Participants<br>- Introduction to machine learning with Python<br>- Virtual Environments<br>- Supervised Learning with Scikit-Learn: Classification (lecture) | - Version control with Git & Github (lecture & exercise)<br>- Supervised Learning with Scikit-Learn: Classification (lecture & exercise) | Excursion | - Building a neural network step-by-step (lecture & exercise)<br>- Using neural networks and PyTorch for classification (lecture & exercise) | - Input: Preparing your own data sets<br>- Practice lab: start your own projects<br>- Peer review and Trainer feedback to support and advance your own projects |
| 12.15-13.30 | 12.15-13.30 | | 12.15-13.30 | 12.15-13.30 |
| Lunch | Lunch | | Lunch | Lunch & Departure |
| 13.30-15.00 | 13.30-15.00 | | 13.30-15.00 | |
| - Supervised Learning with Scikit-Learn: Classification (exercise) | - Introduction to Artificial Neural Networks | *Individual Learning* | - Continue exercise<br>- Input: Running on GPU, saving and loading models, convolutional neural networks | |

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