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| **MODULE 4: Introduction to Machine Learning and Python** | |
| **OBJECTIVES** | * Understand the goals of Artificial Intelligence (AI) * Define learning, machine learning, and understand the goal of learning * Understand the need for machine learning, and the capabilities of machine learning * Understand the difference between the learning algorithm, and the learned classifier * Describe the process of training data generation * Explain the process of devising a machine learning (ML) solution * Understand the basics of artificial neural networks * Differentiate between the different types of learning * Understand the potential of ML learning in earth observation (EO) * Understand how ML is used in image classification * Understand the different approaches to feature extraction from EO data * Understand the basics of the programming language Python and the application Jupyter Notebook * Install Jupyter Notebook and practice basic coding * Understand the basics of Sentinel Hub as an EO Processing Platform * Simple spatial data collection on the field and analysis |
| **METHODS** | Live session, reading material, video’s, links to resources, application exercises, quizzes & discussions |
| **DURATION** | 6.5 hours for participants |

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| **SESSION** | | | **DURATION** | **PARTICIPANTS…** |
| Online | 1.0 | Introduction to Machine Learning and Python | 60 min. | * Get exposed to the basic concepts of ML for EO |
| 1.1 | Introduction to Machine Learning | 30 min. | * Learn about the basic concepts of artificial intelligence |
| 1.2 | ML training data and web mapping | 45 min. | * Learn about the practical aspects of the key steps in Machine Learning. |
| 1.3 | Machine learning algorithms for image classification | 45 min. | * Learn about the general concepts and algorithms for image classification. |
| 1.4 | Python programming and Jupyter Notebook | 90 min. | * Get an understanding of the basics of the programming language Python and Jupyter Notebook. * Reflect on contents and share experience with peers. * Get an understanding of the basics of Sentinel Hub as an EO Processing Platform. |
| 1.5 | Fieldwork: image classification | 120 min. | * Conduct a simple spatial data collection on the field * Reflect on content and share experience with peers |