**SYLLABUS**

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| Course Type | | 전공선택 | | |
| Course Code | | EE 488 (35.488)  전기전자공학 특강 <Machine Learning Basics and Practices> F분반 | | |
| Course Name | Korean | 기계학습 기초와 실습 | | |
| Course Name | English | Machine Learning Basics and Practices | | |
| Instructors | | **해당교수** | | |
| Lecture: Exp: Credit (Homework) | | 3:0:3 | Prerequisites |  |
| Mutually Recognized Course (Undergrad/Grad): ( X ) | | | Term | Spring and Fall |
| Descriptions  of Courses | This course is designed to teach basics and practices of machine learning to 2nd year undergraduate students. Every week consists of a lecture for learning basic theories and a practice session for coding to devise and implement algorithms. Emphasis is on developing hands-on experiences in designing various machine learning methods. This is a self-contained course but basic knowledge of probabilities and linear algebra would be helpful. CS101 or equivalent background is highly desired. The course is also open to 3rd and 4th year students. | | | |

•Schedule

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| Period | Topics (tentative) | Remarks |
| Week 1 | Introduction to AI and Machine Learning | overview of entire class |
| Week 2 | Python/Pytorch Practice |  |
| Week 3 | Regression and Classification | Python/Pytorch exercise |
| Week 4 | Regression and Classification | Python/Pytorch exercise |
| Week 5 | Neural Network Basics – gradient descent and backpropagation |  |
| Week 6 | Neural Network Basics – gradient descent and backpropagation |  |
| Week 7 | Unsupervised/Semi-supervised Learning | K-means/EM/etc. |
| Week 8 | Mid-term exam |  |
| Week 9 | Convolutional Neural Network (CNN) | Basic/Architecture |
| Week 10 | CNN | Popular architecture |
| Week 11 | CNN | Application - detection/segmentation |
| Week 12 | Sequential Model and Recurrent Neural Network (RNN) | Traditional RNN |
| Week13 | RNN | LSTM/GRU & Application |
| Week 14 | Advanced Topics - Generative Model | GAN |
| Week 15 | Advanced Topics - Reinforcement Learning |  |
| Week 16 | Final exam |  |

Lecturer: Prof. Jaekyun Moon