

Lecture 0: Introduction

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Advanced Machine Learning
September–December 2021

Topics to be covered

- Foundations of deep learning
 - Theoretical aspects of machine learning
 - Activation functions, loss functions, optimization strategies
- Convolutional neural networks (CNNs)
- Dealing with sequence data
 - Recurrent neural networks (RNNs)
 - Autoencoders and decoders
- Generative adversarial networks (GANs)
- Bayesian optimization
- Gaussian process regression (GPR)
- Reinforcement learning
- Graphical models and causality

- Course instructors
 - Pranabendu Misra
 - Madhavan Mukund
- Teaching assistants
 - To be announced
- Lectures and tutorials
 - Two online classes a week
- Evaluation
 - Regular small quizzes on class content (roughly 10%)
 - Midsemester exam (roughly 20%)
 - Programming assignments (roughly 30%)
 - Final exam (roughly 40%)
- Course resources
 - CMI Moodle, AML 2021
 - www.cmi.ac.in/~madhavan/courses/aml2021