

IISER Pune - Course Content

Semester	JAN 2025
Open to Semester	6,8,12,14,22,32,34
Course Code	DS3273
Course title	Image and video processing with deep learning
Nature of Course	LL - Lecture and Lab
Credit	3
Coordinator and participating faculty (if any)	Dr. Amit Apte
Pre-requisites	Proficiency in python, calculus, linear algebra
Objectives	<p>This course will be taught by guest faculty Chaitanya Guttikar.</p> <p>The objective of this course is image processing and computer vision related deep learning. The emphasis will be on understanding the theory behind why CNNs work and being able to implement your own deep learning pipelines for training and inference.</p>
Course content	<ol style="list-style-type: none">1. A quick review of basic concepts2. Loss function, back propagation and gradient descent3. Standard learning pipeline and workflow in PyTorch4. Convolutional neural networks5. Concepts from historical photographic darkroom processes and their digital counterparts (and its mathematics)6. Why do convolutional neural networks do so well? (Precursor to Group equivariant neural networks)
Evaluation / Assessment	<p>This course will be taught by guest faculty Chaitanya Guttikar.</p> <p>End Sem = 30%</p> <p>Mid Sem = 30%</p> <p>Others (assignments + project) = 40%</p>
Suggested readings	<ol style="list-style-type: none">1. A Guide to Convolutional Neural Networks for Computer Vision by Salman Khan et al.2. Papers related to topics in the second half
When Next	it is an elective: not sure when next
Date Uploaded	2024-10-23 15:50:52