Deep Learning for AI and Computer Vision

June 5 – 8, 2023

	Day 1: Introduction to Deep Learning and Computer Vision	**Day 2: Scene understanding**	**Day 3: Generative AI**	**Day 4: Challenges and deployment**
9-10am	Introduction to computer vision (introduction and linear filters)	Geometry	Image synthesis and generative models: (Gans, diffusion)	Modern computer vision in industry (self-driving, medical imaging, and social networks)
10-11am	Introduction to machine learning	3D deep learning (Nerf)	AR/VR and graphics applications	Datasets, bias, adaptation, robustness and security
11-11:15am	Break	Break	Break	Break
11:15-12:15	Neural networks	Object detection	Vision and Language (CLIP, deeper dive on transformers)	Foundation Models (models, prompt engineering)
12:15-1:30	Lunch	Lunch	Lunch	Lunch
1:30-2:45	CNNs and Transformers	Scene understanding	Vision for embodied agents (intro to RL)	Foundation Models (compositionality, infrastructure, fine-tuning)
2:45-3	Break	Break	Break	Break
3:00-5:00	Lab on Pytorch	Lab on scene understanding	Lab on gans and diffusion models	Lab on using modern computing infrastructure