جامعة الملك عبدالله
للعلوم والتقنية
King Abdullah University of
Science and Technology

أكاديمية كاوست
KAUST ACADEMY

AI Summer School 2025

June – August 2025
King Khalid University (KKU)
KAUST Academy

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Welcome to AI Summer School 2025!

An intensive, hands-on journey into frontier AI research and practice.

2023

2024

KAUST Academy: Mission + Who's behind it

Prof. Sultan Albarakati

Associate Vice President, Saudi Talent Development, KAUST

Prof. Naeemullah Khan

Deputy Director, Instructional Associate Professor, KAUST

Meet your instructors

Prof. Naeemullah Khan

Dr. Muhammad Mubashar

Dr. Prashant Aparajeya

Dr. Shaden Alshammari

Dr. Salman Khan

Meet your TAs

Mohamed Eltayeb

Ali Alqutayfi

Hassain Alsayhah

Lama Ayash

Daniel Alsadiq

Bader Alshamrani

Abdulrahman Alfrihidi

Learning Journey Recap – Stage 2 (ML & DL)

Classic ML: regression, classification, ensembles.

Optimization: SGD, momentum, Adam; regularization tactics.

Deep Learning Basics: perceptron, multilayer nets, activations.

Tooling: hands-on with scikit-learn & PyTorch mini-labs.

Learning Journey Recap – Stage 3 (Computer Vision)

CNN & Transfer Learning: convolutional layer, residual learning, EfficientNet.
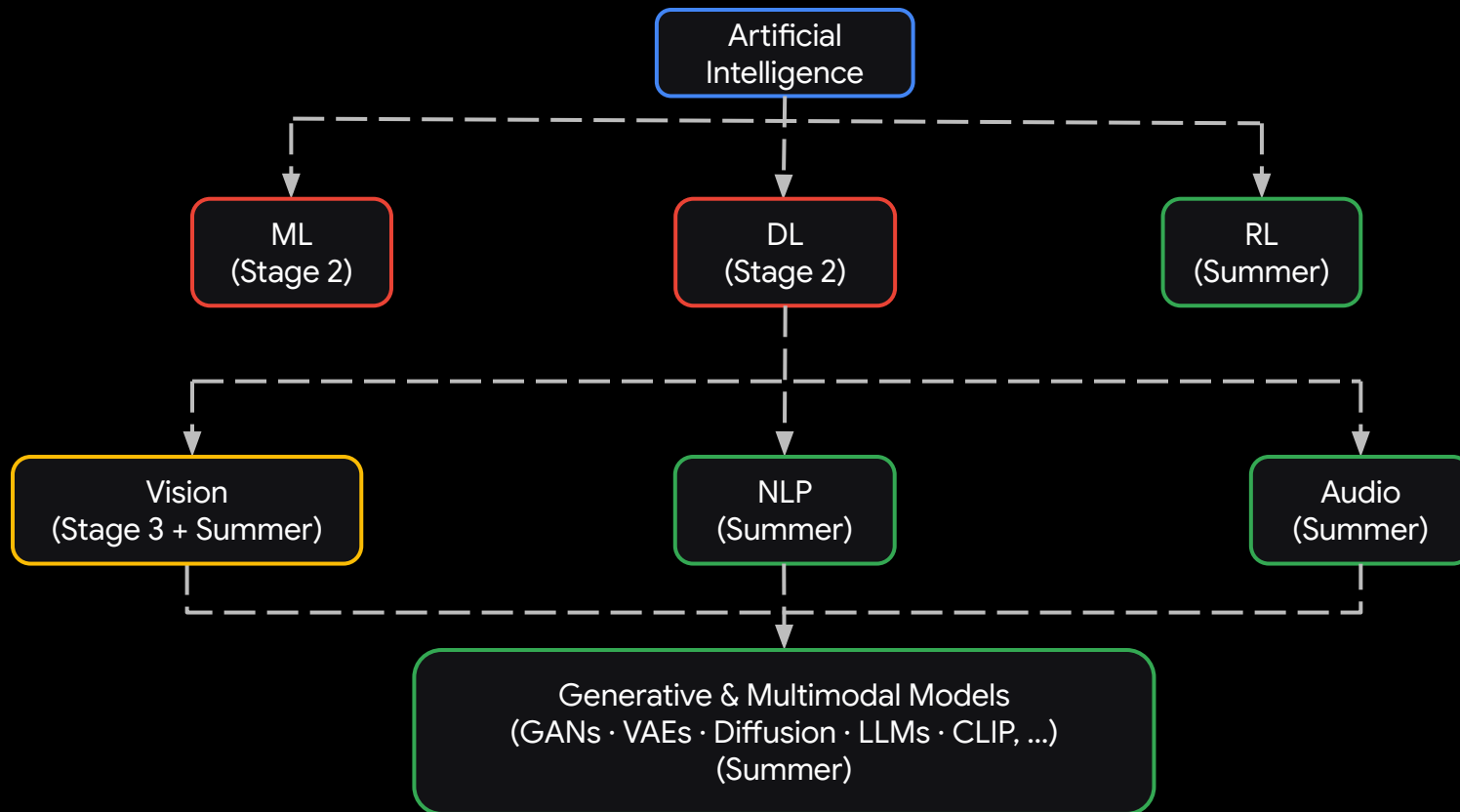
Segmentation: Unet & MaskRCNN

Practical Deep Learning: data handling, augmentation, regularization.

Object Detection: RCNN, FastRCNN, FasterRCNN, YOLO

AI Landscape Overview

Summary Content

Week	Topics	Instructor
1	Computer Vision, AEs, Autoregression	Prof. Naeemullah Khan
2	GANs, Normalizing Flows, Diffusion Models	Dr. Shaden Alshammari
3	Vision Transformers & Self-supervised Learning	Dr. Muhammad Mubashar
4	Reinforcement Learning 1	Dr. Prashant Aparajeya
5	Reinforcement Learning 2	Dr. Prashant Aparajeya
6	Introduction to Natural Language Processing	Dr. Muhammad Mubashar
7	Transformers & LLMs	Dr. Muhammad Mubashar
8	Audio & Multimodality	Dr. Salman Khan

Expected Learning Outcomes

- Understand and evaluate recent AI research publications.
- Build diverse models across generative, vision, RL, and NLP domains.
- Implement and extend methods from research papers.
- Gain proficiency with advanced AI tools (e.g., PyTorch, Hugging Face).
- Collaborate effectively in teams on an AI project.