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

أكاديمية كاوست
KAUST ACADEMY

AI Summer School 2025

June – August 2025
King Abdullah University of Science and Technology (KAUST)

Table of Contents

1. Introduction
2. Quick recap of your AI journey so far
3. Overview of what's coming this summer
4. Expected Learning outcomes

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

أكاديمية كاوست
KAUST ACADEMY

Welcome to AI Summer School 2025!

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

2023

2024

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

أكاديمية كاوست
KAUST ACADEMY

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. Tanveer Hussain

Dr. Prashant Aparajeya

Prof. Fabio Cuzzolin

Prof. George Turkiyyah

Dr. Salman Khan

Meet your TAs

Ali Habibullah

Harethah Abu Shairah

Hassan Alsayhah

Dr. Kerven Durdymyradov

Yazan Alshuaibi

Bader Alshamrani

Mohamed Eltayeb

Abdullah Jan

Dr. Amanat Kafizov

Abdallah Hammad

Abdulaziz Alomair

Learning Journey Recap – Stage 2 (ML & DL)

Classic ML: regression, classification, ensembles.

Deep Learning Basics: perceptron, multilayer nets, activations.

Optimization: SGD, momentum, Adam; regularization tactics.

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

Learning Journey Recap – Stage 3 (Computer Vision)

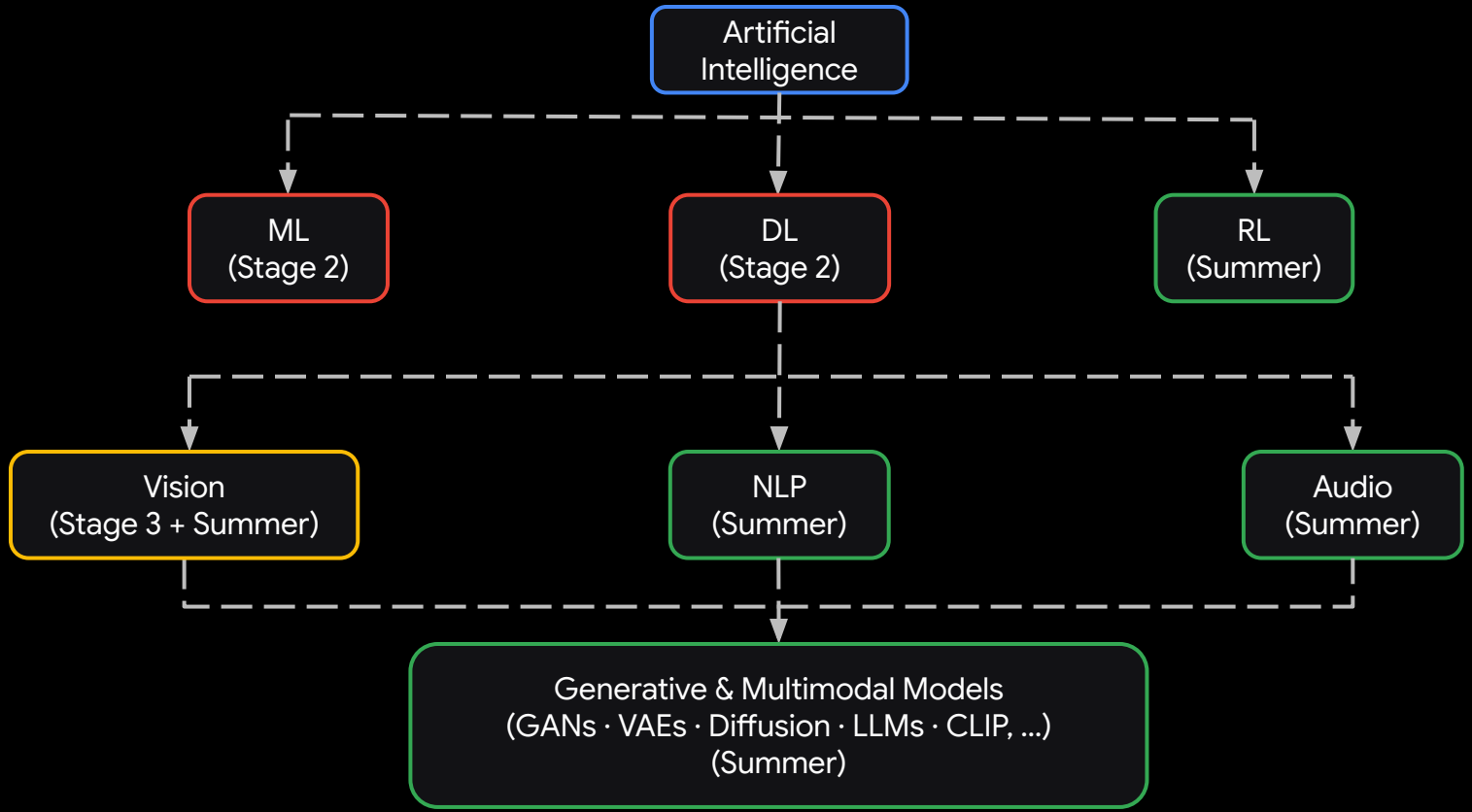
CNN & Transfer Learning: convolutional layer, residual learning, EfficientNet.

Segmentation: Unet & MaskRCNN

Practical Deep Learning: data handling, augmentation, regularization.

Object Detection: RCNN, FastRCNN, FasterRCNN, YOLO

AI Landscape Overview



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

أكاديمية كاوست
KAUST ACADEMY

Summer Content

Week	Topics	Instructor
1	Computer Vision, AEs, Autoregression	Prof. Naeemullah Khan
2	GANs, Normalizing Flows, Diffusion Models	Dr. Tanveer Hussain
3	Vision Transformers & Self-supervised Learning	Dr. Tanveer Hussain
4	Reinforcement Learning 1	Dr. Prashant Aparajeya
5	Reinforcement Learning 2	Prof. Fabio Cuzzolin
6	Introduction to Natural Language Processing	Prof. George Turkiyyah
7	Transformers & LLMs	Prof. George Turkiyyah
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.