Day 1: Introductions to LLMs

Deck: Introduction to LLMs
Deck: Transformers

10:00 – 10:15 Introduce Each Other
10:15 - 12:15 Intro to LLMs (45 mins)
Tokenizer and Word Embeddings (20 mins)
Encoder Decoder Networks, Attention, Attention and Alignment (30 mins)
Attention Youtube Video (30 mins)
12:15 – 13:15 Transformers
13:15 - 14:30 Lunch
14:30 – 15:00 Sampling Strategies
15:00 – 17:30 Attention Transformer ([datalabs day 1] foundations_of_llms_practical)
17:30 – 18:00 Sampling Strategies Lab
([datalabs day 1] Decoding Strategies in Large Language Models)

Day 2: Pre- and Post- Training

Deck: Pre-training
Deck: Post-training

10:00 – 10:25 Give an overview of what will be discussed in the next 3 days
10:25 – 10:50 Introduction to Pretraining, Data
10:50 - 12:00 Pretraining Architecture (45 mins),
Pretraining Evaluation and Different LLMs (25 mins)
12:00 - 13:15 Intro and Data (10 mins)
Training and Evaluation (10 mins)
LoRa and QLora (40 mins)
14:30 – 15:00 Buffer/QnA
15:00 – 16:00 Finetune GPT-2 with LoRA ([datalabs day 2] finetuning with lora)
16:00 – 18:00 Low Resource LLMs with LoRa : [datalabs day 2] LoRa with MT5

Day 3: Preference Alignment

Deck: RL 101
Deck: RLHF

10:00 – 11:10 Intro and Applications (15 mins),
Fundamentals: Framework (5 mins) + Terminology (25 mins) +
Optimization (10 mins) + Quick Recap (15 mins)
11:10 - 12:10 Overview (7 + 10 mins)
PPO (10 mins) + DPO (7 mins) + GRPO (5 mins)
Beyond RLHF (5 mins)
12:10 – 13:15 AI in the Real World (Economy and Ethics. Go over Stanfords Report)
14:30 – 18:00 Build RL Game based on Q-Learning (
[datalabs day 3] reinforcement_learning_101)

Day 4: LLM Efficiency

Deck: LLM Efficiency: Model Compression
Deck: LLM Efficiency: Part 2

10:00 – 11:30 Quantization (1.5 + 0.5)
11:30 – 12:30 Pruning
12:30 – 13:15 Attention
14:30 – 16:30 Knowledge Distillation
16:30 – 18:00 Matryoksha (30 min + 15 mins) + Speculative Decoding (30 min + 15 mins)

(Notebooks linked within slides)

Day 5: Hackathon

10:00 – 10:45 Go over basics in [day_5] llm_hack_and_tell
10:45 - 16:00 (4h hackathon, 1 h 15 min for lunch)
16:00 – 18:00 Show and Tell!