



# AI SYSTEM ARCHITECTURE AND LARGE LANGUAGE MODEL APPLICATIONS

On Campus and Live Virtual | [professional.mit.edu/llm](https://professional.mit.edu/llm) | Lead Instructor: David Martinez

## DAY 1

	TOPICS	INSTRUCTOR(S)	READINGS/ ASSIGNMENTS
8:45–10:10 am	Course introduction, AI background and system architecture building blocks	David Martinez	AI Book: Chapter 1
10:10–10:20 am	<b>BREAK</b>		
10:20–11:30 am	Systems engineering principles	David Martinez	AI Book: Chapter 2
11:30–12:30 pm	<b>LUNCH BREAK</b>		
12:30–1:40 pm	Data conditioning	David Martinez	AI Book: Chapter 3
1:40–1:50 pm	<b>BREAK</b>		
1:50–3:00 pm	Time to prepare proposals for large language model application	Class Project Teams	
3:00–5:00 pm	Team proposal presentations	Class Project Teams	

## DAY 2

	TOPICS	INSTRUCTOR(S)	READINGS/ ASSIGNMENTS
8:30–8:45 am	Q&A on previous day material and Day 2 agenda overview	David Martinez	
8:45–10:10 am	Machine learning fundamentals	David Martinez	AI Book: Chapter 4
10:10–10:20 am	<b>BREAK</b>		
10:20–11:30 am	Performance evaluation techniques	David Martinez	AI Book: Chapter 4 and appendix A.3
11:30–12:30 pm	<b>LUNCH BREAK</b>		
12:30–1:40 pm	Multi-layer perceptron (MLP) machine learning model	David Martinez	AI Book: Chapter 4 and appendix A.4
1:40–2:50 pm	Larger language models (LLMs) primer	David Martinez	LLM implementation techniques (seminal papers)
2:50–3:00 pm	<b>BREAK</b>		
3:00–5:00 pm	Introduction to LLM design on a contemporary AI platform	Hopi Iyer	LLM implementation techniques (seminal papers)



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## DAY 3

	TOPICS	INSTRUCTOR(S)	READINGS/ ASSIGNMENTS
8:30–8:45 am	Q&A on previous day material and Day 3 agenda overview	David Martinez	
8:45–10:10 am	Modern computing as enabling technology	David Martinez	AI Book: Chapter 5
10:10–10:20 am	<b>BREAK</b>		
10:20–11:30 am	Human-machine teaming	David Martinez	AI Book: Chapter 6
11:30–12:30 pm	<b>LUNCH BREAK</b>		
12:30–1:40 pm	Panel: AI leaders and practitioners are invited to discuss LLMs challenges and opportunities	David Martinez Moderator	
1:40–2:50 pm	Responsible AI	David Martinez	AI Book: Chapter 8
2:50–3:00 pm	<b>BREAK</b>		
3:00–5:00 pm	Teams work on the implementation of LLM application	Class project teams	

## DAY 4

	TOPICS	INSTRUCTOR(S)	READINGS/ ASSIGNMENTS
8:30–8:45 am	Q&A on previous day material and Day 4 agenda overview	David Martinez	
8:45–10:10 am	Guidelines on deploying LLMs	David Martinez	AI Book: Chapters 10 and 11 plus LLMs and MLOps (seminal papers)
10:10–10:20 am	<b>BREAK</b>		
10:20–11:30 am	Teams work on the implementation of LLM application (cont.)	Class project teams	
11:30–12:30 pm	<b>LUNCH BREAK</b>		
12:30–1:40 pm	Teams work on the implementation of LLM application (cont.)	Class project teams	
1:40–2:50 pm	Teams work on the implementation of LLM application (cont.)	Class project teams	
2:50–3:00 pm	<b>BREAK</b>		
3:00–5:00 pm	Teams finalize the implementation of LLM application and prepare presentation	Class project teams	



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## DAY 5

	TOPICS	INSTRUCTOR(S)
8:30–8:45 am	Q&A on previous day material and Day 5 agenda overview	David Martinez
8:45–10:10 am	Summary of material covered in class	David Martinez and Hopi Iyer
10:10–10:20 am	<b>BREAK</b>	
10:20–11:40 am	Team class project presentation	Class project teams (4 teams; each 20 min.)
11:40–12:30 pm	<b>LUNCH BREAK</b>	
12:30–1:50 pm	Team class project presentation (cont.)	Class project teams (4 teams; each 20 min.)
1:50–3:00 pm	Course wrap-up	Course completion requires attending all lectures and completing team class project