

Dialogue System Labs (with LLMs)

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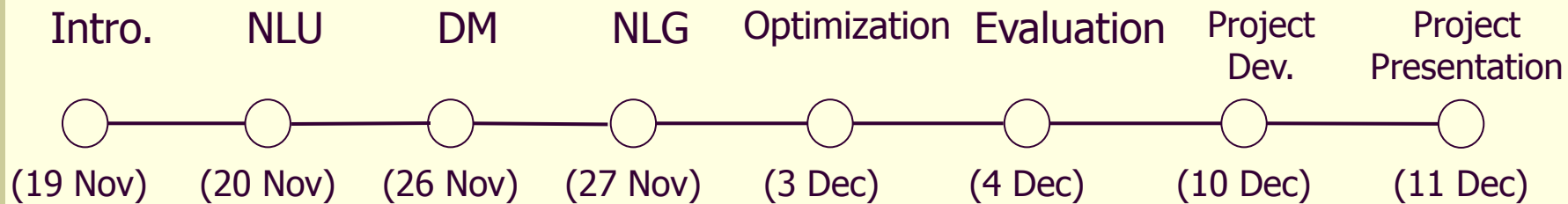
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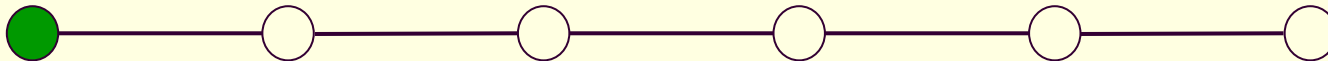
Outline



- Starting today, we will have **6 labs** + **2 coaching labs** together.
- We will develop different components of a dialogue system
- This includes **ALL-IN-LAB NO-HOMEWORK** hands-on sessions
- Participation is **HIGHLY-STRONGLY-RECOMMENDED**

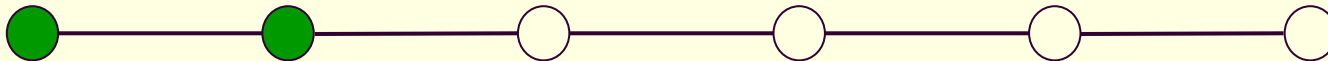
Lab 1: Introduction (19 Nov)

- First Hour:
 - Installation + Set up
 - How to use HPC
- Second Hour:
 - Prompting ($\{0,1,\text{few}\}$ -shot)
 - Classification with LLMs
 - Data Generation with LLMs
 - End-to-End PizzaBot



Lab 2: NLU (20 Nov)

- First Hour:
 - NLU Component Design (3 intents)
 - Intent Classification
 - SlotValue Detection
- Second Hour:
 - Data Generation
 - Meaning Representation Generation
 - Model Evaluation (Intrinsic)



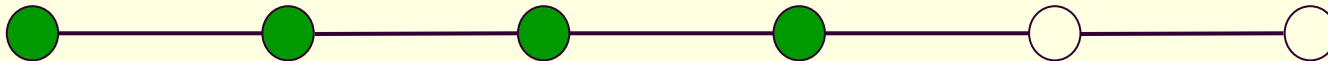
Lab 3: DM (26 Nov)

- First Hour:
 - DM Component Design
 - System Action Classification
 - Policy Design (Confirmation, Fallback, error handling, ...)
- Second Hour:
 - MR to Next Best Action
 - MR to Policy
 - Model Evaluation (Intrinsic)



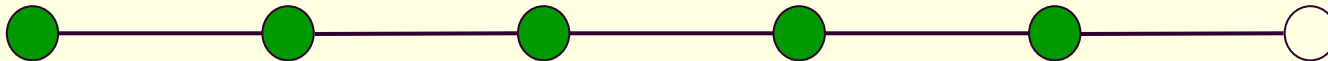
Lab 4: NLG (27 Nov)

- First Hour:
 - NLG Component Design
 - Sequence Injection with Templates
 - Response Generation with LLMs
- Second Hour:
 - Connecting the components
 - Model Evaluation (Extrinsic)



Lab 5: Optimization (3 Dec)

- First Hour:
 - Introducing Mixed-Initiativeness
 - Handling Over-Informative & Under-Informative Users
- Second Hour:
 - Flexibility in Dialogue System
 - Confirmation, Grounding
 - Conversational Markers



Lab 6: Evaluation (4 Dec)

- First Hour:
 - Pipeline vs End-to-End
 - Intrinsic Evaluations of different Configurations
- Second Hour:
 - Human Evaluation



Project Presentation

- You will shortly present the dialogue system you want to develop (PizzaBot, MovieBot, etc.)
- We will provide feedback and tailored suggestions to help you through the development
- We will ensure to help you not to get lost in difficulties and (eventually) deliver a good project to (hopefully) get a good mark

Expected Outcome

- By the end of the labs, **in the classroom**, we develop
 - A working Pipe-line System
 - 75% of final project done (*close to passing the exam*)
 - Know how-to complement the system (*road to high marks*)
 - more intents
 - more system actions
 - mixed-initiative interaction

