



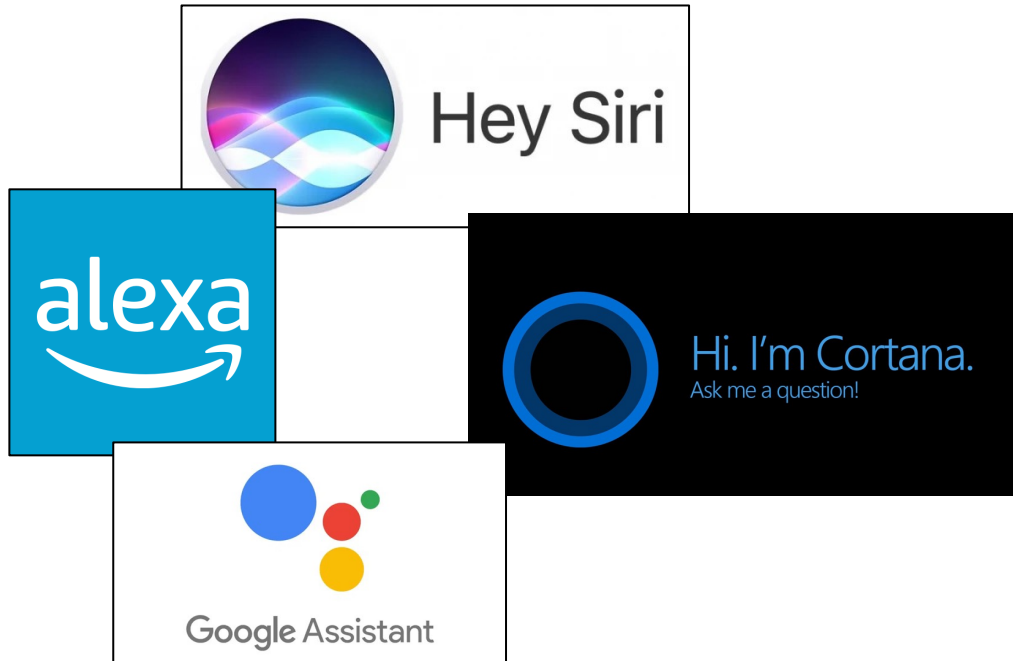
# Building an Intelligent Conversational Agent

ATAI 2022, Prof. Abraham Bernstein

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# 1. Conversational Agents



Who directed Batman 1989

**Batman was directed by Tim Burton.**

 **Tim Burton**  
American filmmaker and artist

Timothy Walter Burton is an American filmmaker and artist. He is known for his gothic fantasy and horror films such as Beetlejuice, Edward Scissorhands, The Nightmare Before Christmas, Ed Wood, Sleepy Hollow, Corpse Bride, Sweeney Todd: The Demon Barber of Fleet Street, and Dark Shadows.


Wikipedia

Date of birth August 25, 1958

Place of Birth Burbank >

Where was the Director of Batman 1989 born


**Here's what I found.**

 **WEBSITES**

**Batman (1989 film) - Wikipedia**  
After Burton was hired as director in 1986, Steve Englehart and Julie Hickson wrote film treatment...  
[en.wikipedia.org](https://en.wikipedia.org)

**Tim Burton | Batman Wiki - Fandom**  
Timothy Walter Burton is an American film director, animator and artist, known for his frequent collabo...  
[batman.fandom.com](https://batman.fandom.com)

**Batman (1989) - IMDb**  
Batman: Directed by Tim Burton. With Michael Keaton, Jack Nicholson, Kim Basinger, Robert...  
[imdb.com](https://imdb.com)

Show Google Results 



## 2. ATAI Project

### ➤ Goal

- independently implement a conversational agent that can hold conversations with humans and answer natural language questions ([individual work](#))

### ➤ Evaluation Event

- December 14, 2022, 8:00 – 12:00, BIN-1-B.01
- required to be present ([20% of the final grade](#))

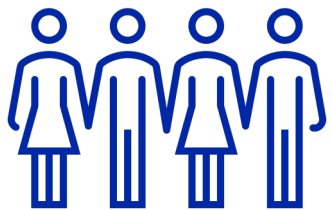
### ➤ Report Submission

- submit the source code (.zip/.rar file) and a two-page report via OLAT
- [December 14, 2022, 23:59](#) (Zurich time)

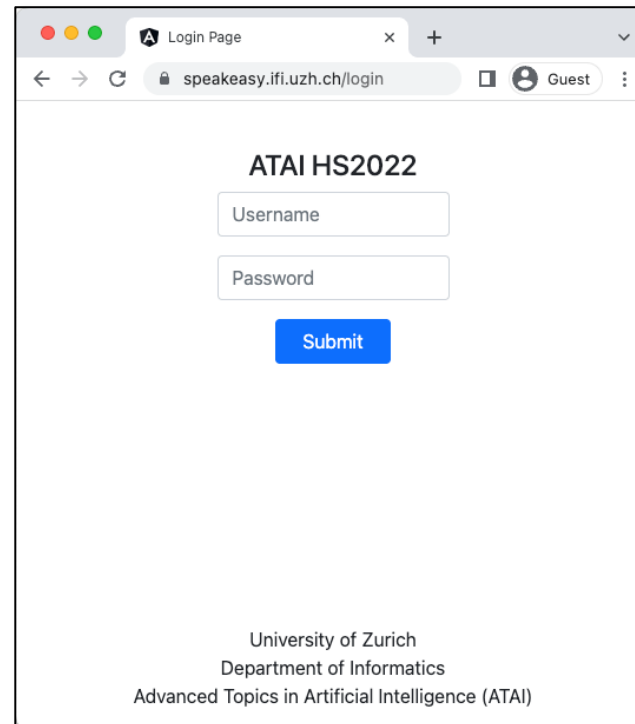
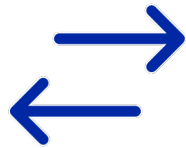


### 3. Speakeasy

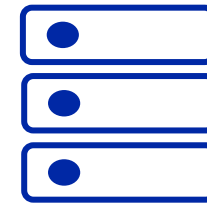
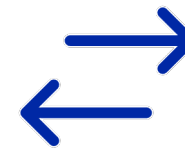
➤ Web-based Infrastructure



Users



Web Pages

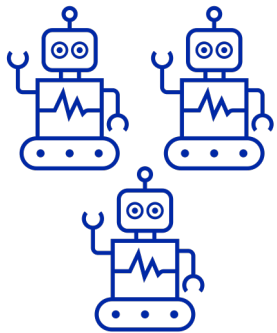


<https://speakeasy.ifi.uzh.ch/>

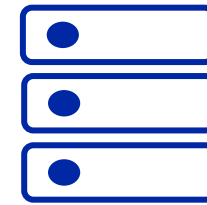
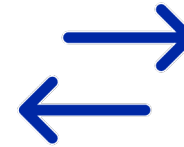
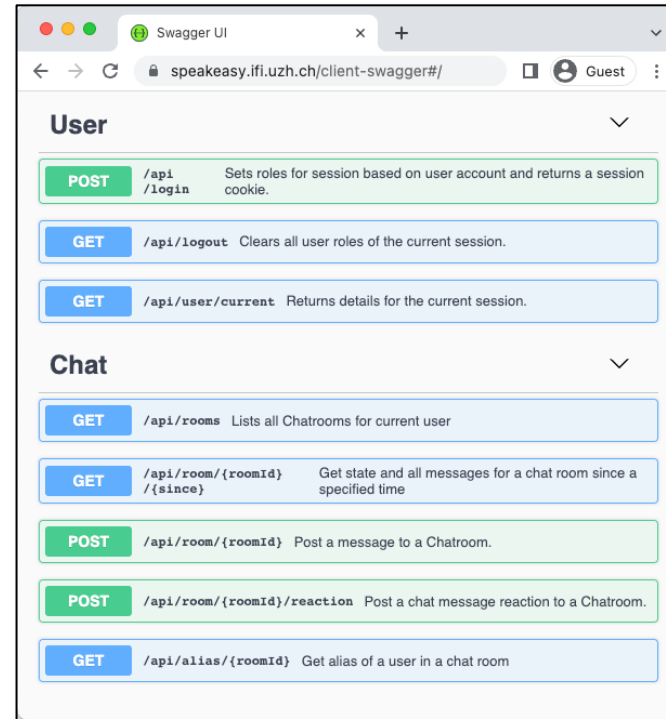
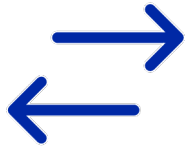


### 3. Speakeasy

#### ➤ Web-based Infrastructure



Agents



<https://speakeasy.ifi.uzh.ch/>

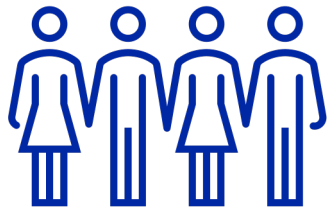
HTTP Requests



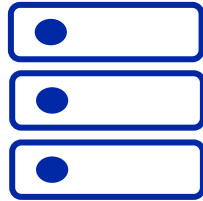
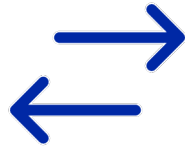


## 4. Evaluation Event

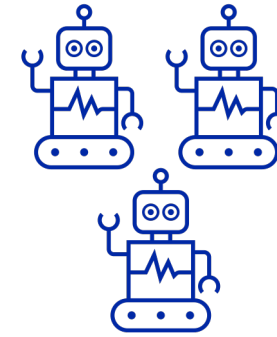
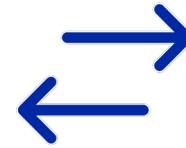
### ➤ Overview



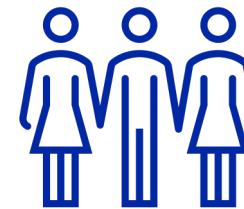
Students



<https://speakeasy.ifi.uzh.ch/>



Students' Agents



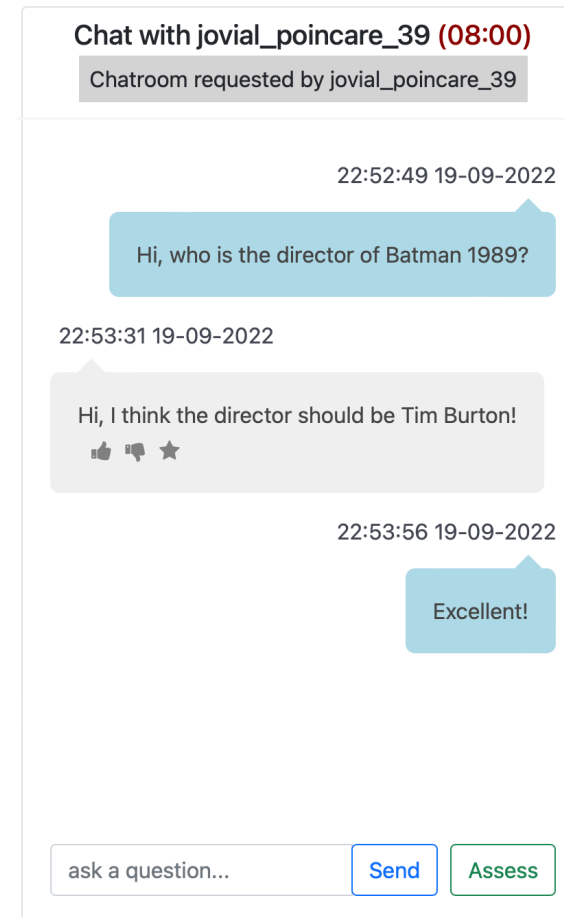
TAs + Proctors



## 4. Evaluation Event

### ➤ Chatroom

- there is **one agent** from another student;
- you need to have **a conversation** with the agent;
- **prompts** about **what questions to ask** in the conversation will be given in the header of the chatroom;
- the conversation will mainly be **you asking questions** and the **agent answering your questions**;
- there is a **time limit** for each chatroom;





## 4. Evaluation Event

### ➤ Rating

- when the conversation is finished, you need to fill out a form to **rate the agent**;
- agents are assessed in terms of **accuracy**, **completeness**, **timeliness**, and **human likeness**;
- there will be **several rounds of evaluation** to collect sufficient ratings for your agent from different and random people;
- **all your conversations and ratings are logged in Speakeasy!**

Chat with jovial\_poincare\_39

Chatroom requested by jovial\_poincare\_39

22:52:49 19-09-2022

Hi, who is the director of Batman 1989?

22:53:31 19-09-2022

Hi, I think the director should be Tim Burton!

👍 🗨️ ⭐

22:53:56 19-09-2022

Excellent!

ask a question...

Send

Assess

Ratings for jovial\_poincare\_39

1. On average, the questions I asked in this conversation were answered accurately.

☐ Strongly Disagree

☐ Slightly Disagree

☐ Undecided

☐ Slightly Agree

☐ Strongly Agree

2. On average, the answers I received in this conversation were complete.

☐ Strongly Disagree

☐ Slightly Disagree

☐ Undecided

☐ Slightly Agree

☐ Strongly Agree

3. On average, the answers I received in this conversation were provided in a timely fashion.

☐ Strongly Disagree

☐ Slightly Disagree

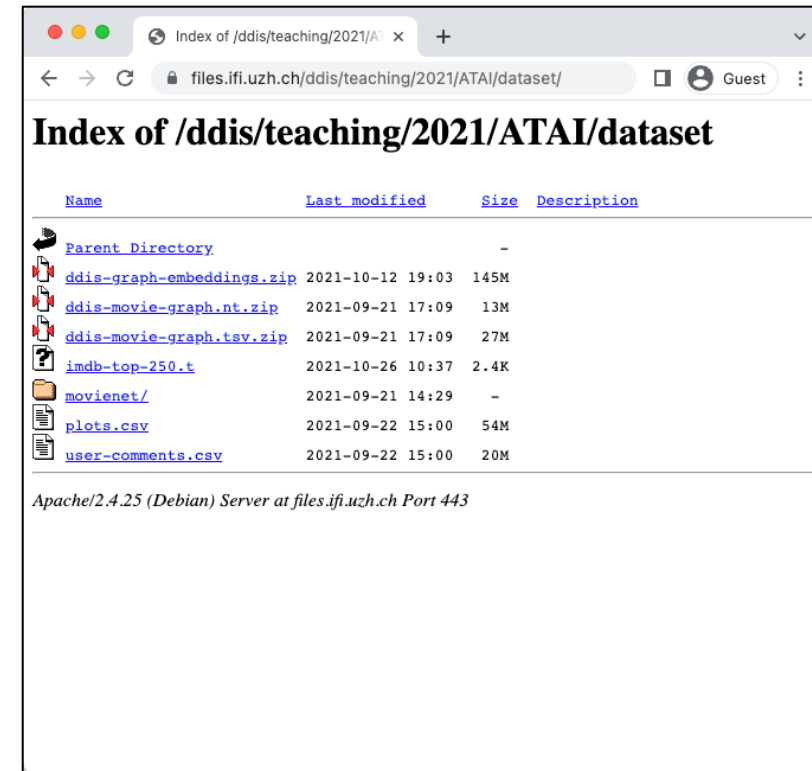
Submit and Close





## 5. Datasets

- we provide a collection of datasets that your agent must use for answering questions in the evaluation event:
  - a knowledge graph about movies;
  - a multimedia dataset;
  - pre-trained knowledge graph embeddings;
  - a crowdsourcing dataset\*;



Index of /ddis/teaching/2021/ATAI/dataset

Name	Last modified	Size	Description
Parent Directory		-	
<a href="#">ddis-graph-embeddings.zip</a>	2021-10-12 19:03	145M	
<a href="#">ddis-movie-graph.nt.zip</a>	2021-09-21 17:09	13M	
<a href="#">ddis-movie-graph.tsv.zip</a>	2021-09-21 17:09	27M	
<a href="#">imdb-top-250.t</a>	2021-10-26 10:37	2.4K	
<a href="#">movienet/</a>	2021-09-21 14:29	-	
<a href="#">plots.csv</a>	2021-09-22 15:00	54M	
<a href="#">user-comments.csv</a>	2021-09-22 15:00	20M	

Apache/2.4.25 (Debian) Server at files.ifi.uzh.ch Port 443

\* The crowdsourcing dataset will be provided before the corresponding session.

<https://files.ifi.uzh.ch/ddis/teaching/2021/ATAI/dataset/>



## 6. Questions

- there will be **five types of questions**;

### ➤ Factual Questions

- factual questions can be answered based on the provided **knowledge graph**.

Who is the director of Good Will Hunting?	Gus Van Sant is the director of Good Will Hunting.
Who directed The Bridge on the River Kwai?	David Lean directed The Bridge on the River Kwai.
Who is the director of Star Wars: Episode VI - Return of the Jedi?	I think it is Richard Marquand.



## 6. Questions

### ➤ Embedding Questions

- the provided **pre-trained embeddings** would be needed for answering embedding questions.

Who is the screenwriter of The Masked Gang: Cyprus?	The screenwriter of The Masked Gang: Cyprus is Murat Aslan.
What is the MPAA film rating of Weathering with You?	The MPAA film rating of Weathering with You is PG-13.
What is the genre of Good Neighbors?	The genre of Good Neighbors is neo-noir.



## 6. Questions

### ➤ Multimedia Questions

- the provided [multi-media dataset](#) would be needed for answering multi-media questions.

Show me a picture of Halle Berry.

What does Julia Roberts look like?

Let me know what Sandra Bullock looks like.







## 6. Questions

### ➤ Recommendation Questions

- recommendation questions can be answered based on the provided [knowledge graph](#).

Recommend movies similar to Hamlet and Othello.	Adequate recommendations will be movies in the drama genre that are based on classic literature (e.g., Shakespeare, Dickens, or Jane Austen).
Given that I like The Lion King, Pocahontas, and The Beauty and the Beast, can you recommend some movies?	Adequate recommendations will be (2-D) animated movies or real-life remakes of Disney movies.
Recommend movies like Nightmare on Elm Street, Friday the 13th, and Halloween.	Adequate recommendations will be horror movies from the 1970s or 1980s or sequels to the movies.





## 6. Questions

### ➤ Crowdsourcing Questions

- the provided [crowdsourcing dataset](#) would be needed for answering crowdsourcing questions.

What is the box office of The Princess and the Frog?	The box office of The Princess and the Frog is 267000000.
Can you tell me the publication date of Tom Meets Zizou?	The publication date of Tom Meets Zizou is 2011-01-01.
Who is the executive producer of X-Men: First Class?	The executive producer is Sheryl Lee Ralph.



## 7. FAQs

- you are free to use [any programming language](#) you prefer, but our materials will be predominantly in [Python](#);
- you can use [external libraries](#) and [pre-trained models](#) for solving [specific problems](#) (e.g., [HuggingFace](#) language models and [NLTK](#) for natural language processing);
- the [difficulty/complexity of questions](#) in the evaluation session will be close to that of the above ones;
- there are [no sessions for developing your agent during the course](#) (start coding ASAP once the related session has been given!);
- detailed information: OLAT -> Project;
- other questions: OLAT -> Forum;