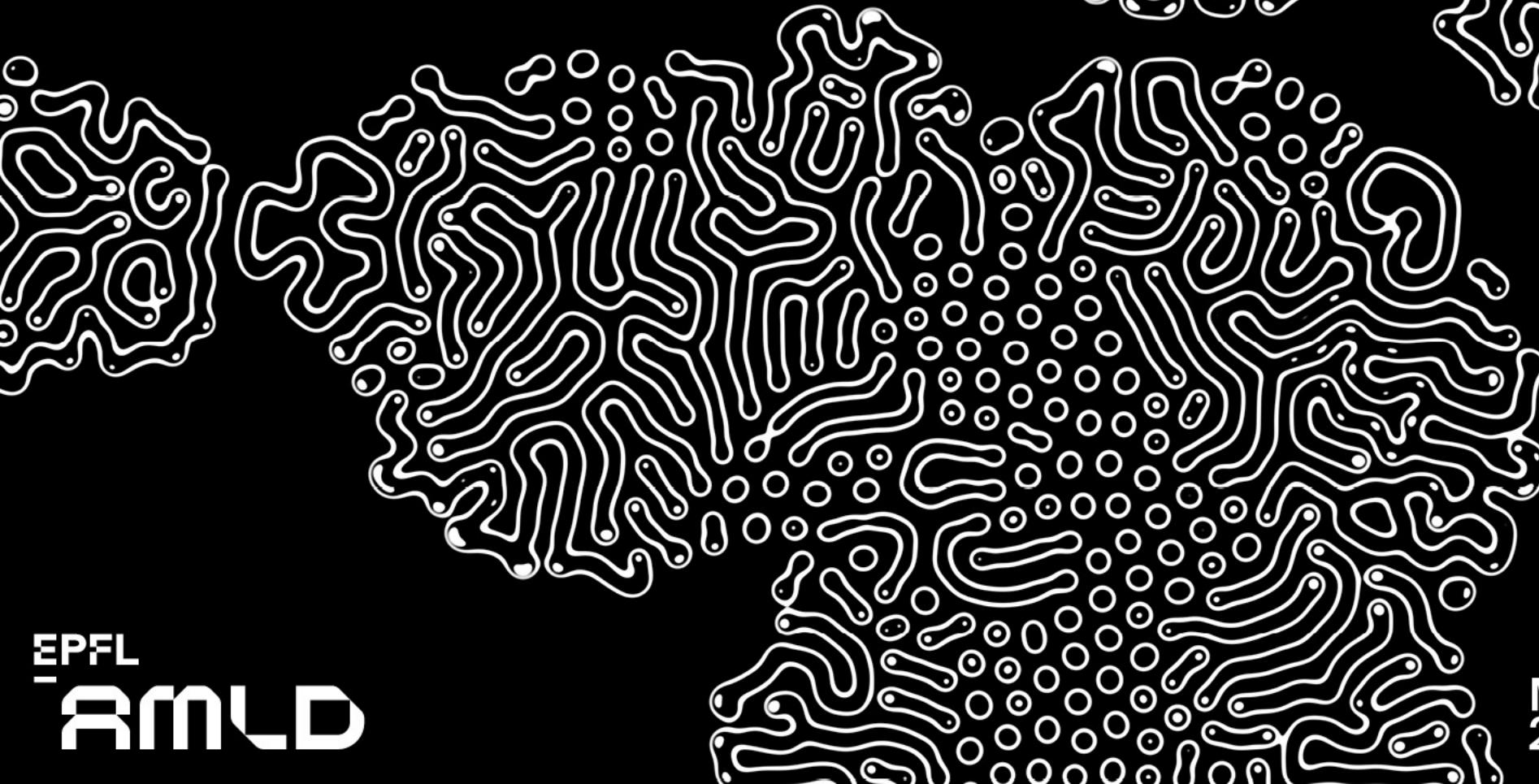


# Applied Machine



# Learning Days





*Unlock the Power of  
Voice: Build Your  
AI Vocal Agent*



*Presentation for* **EPFL**  
**ARM LD**



**Mélanie Schroeter**



**Sofia Mastoridis**



**Matthieu Saussaye**



# Agenda

**Comment l'IA est un game-changer dans le contexte des études de marché à travers le logiciel Smart Interview ?**

***Une opportunité de vous inscrire au AI international challenge, obtenir un cash prize jusqu'à 10k.- et transformer votre idée en start-up.***

**11H** : Business case, Melanie (Market Analyst & Information Specialist chez **@Retraites Populaires**) - objectifs, cas d'usage et impact significatif de l'IA dans les études de marché.

**11h15** : Sofia vous dévoile les coulisses du Hackathon IA ICC, 25 août 2024 - origine de notre produit SmartInterview. Découvrez une session de programmation intense de 9 jours avec jusqu'à 10 000 CHF à gagner pour les vainqueurs du hackathon, une chance de démarrer votre startup !

**11h30** : Workshop sur le développement d'un agent vocal avancé, mettant l'accent sur l'utilisation de Whisper pour une transcription précise et l'emploi de LLMs pour contrôler efficacement la conversation.



Votre partenaire de confiance pour que l'IA soit au service de votre croissance.

Start-up Valaisanne



PULSE PARTNERS

Ils nous font confiance

HOME  
AUTOMATION  
*By NJ*

**L/NK**  
a YouGov company



BrandTrends

NIRIS

### Partenaires

Académique



**EPFL**

Innovation

the **ark**



# Our team and its background

## Pulse Partners

The trusted Swiss agency  
for the development of your AI/Data projects.

Based in Switzerland, sigmapulse specializes in deploying safe LLMs algorithms that empower people. We prioritize value creation and data privacy, ensuring our AI models are GDPR/nLPD-compliant.



**PULSE PARTNERS**



**Matthieu Saussaye**

*Chief Executive Officer*

Matthieu holds a MsC from EPFL in Computer Science and HEC In Entrepreneurship. He carried +10 ML Science project during its past experience.

**Human-like conversation**



**Zero-delay dialogue**



Follows-up based on user responses

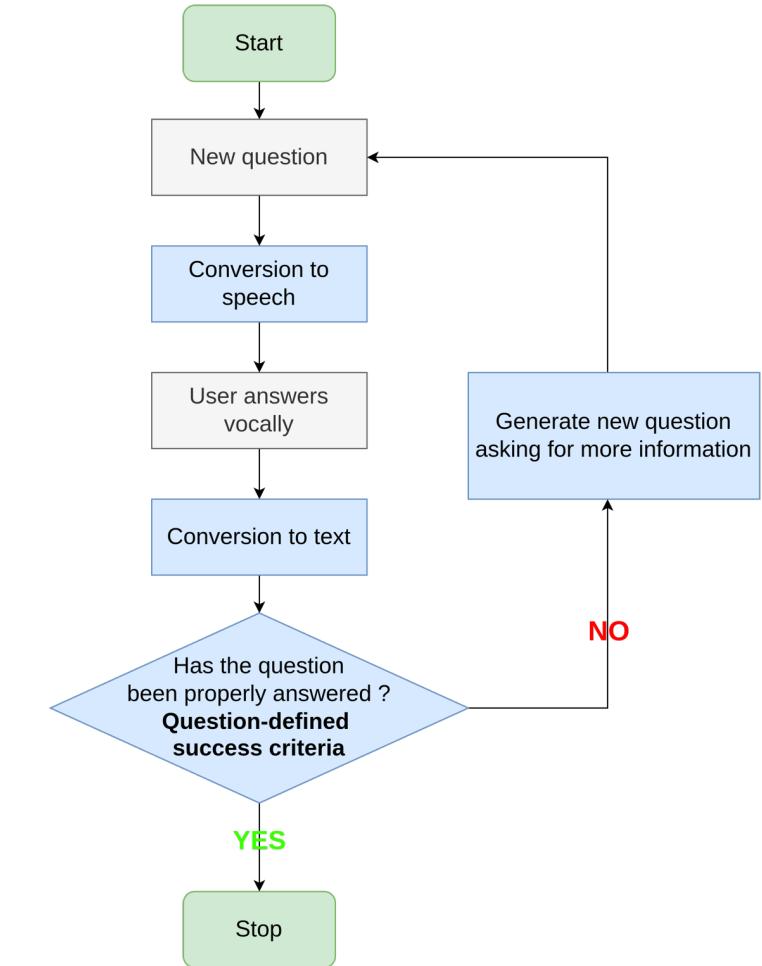
Can you detail the personalized advice that ***Retraites Populaires*** offers to its clients?



AI Interviews that dig deep



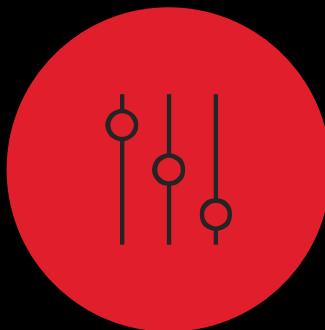
# Flagging system



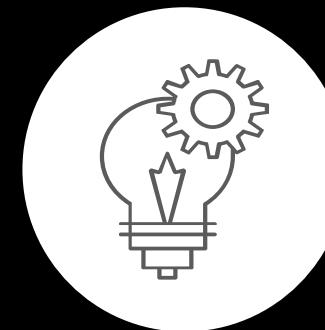
# The impact of smartinterview on reply time



**4.4x faster reply  
In average**



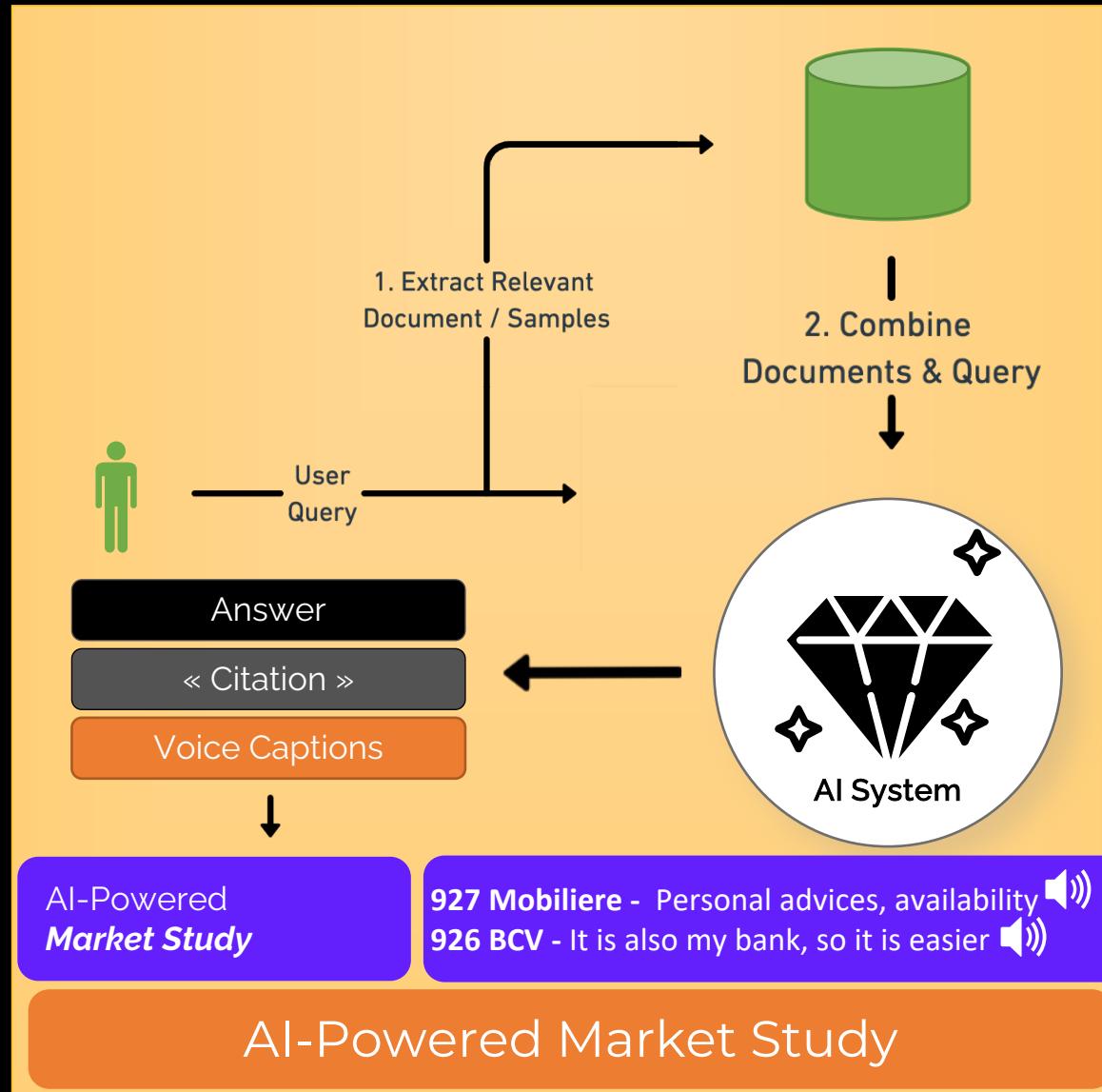
**50 seconds saved  
by questions  
(in average)**



**More engagement,  
more information  
collected.**

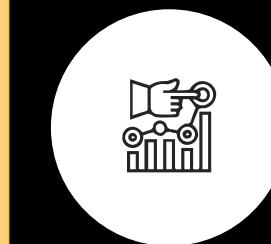


# How smart interview enhance Retraites Populaires reports



## « Honest » Brand Perception

Combining Structured and Unstructured Data



## Access to people captions

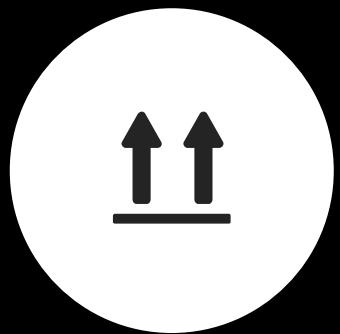
RAG matching the brand-name with the corresponding voice extract



## An all-in-one humanized brand analytics

Enhance the quality for brand conclusions

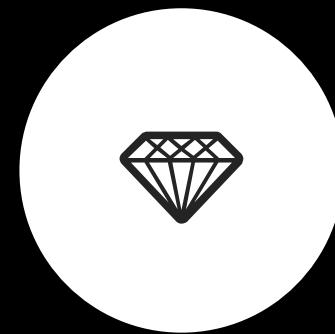
# Scope of the project



Answer collection  
across the Vaud over  
600 respondents



Tailor-made  
survey for  
**Retraites  
Populaires**



Harnessing the power of  
AI & Voice to generate  
« smart questions »





AI SUPERHACKTHON

# JOIN THE HACK!

2024 Idiap Create Challenge  
13th edition  
August 20-28 2024  
Martigny, Switzerland



# A 9-DAY AI SUPER-HACKATHON

# JOIN THE HACK

A unique opportunity to hack and be supported by our teams of engineers, developers, designers, and creative talents from all around the globe.

You will be working hard to create prototype solutions to real-life challenges!



THE IDIAP CREATE CHALLENGE

# A HACKATHON LIKE NO OTHER



## SOLUTIONS-FOCUSED

Participants deliver advanced prototypes and solutions to real-world challenges submitted by you, your team, or by our partners.



## LEADING AI RESEARCH INSTITUTE

The ICC is organized by Idiap, a global leader in artificial intelligence research and technology transfer. The event is rooted in the local entrepreneurship ecosystem through the support of Ideark, a startup incubator.



## GLOBAL COMMUNITY

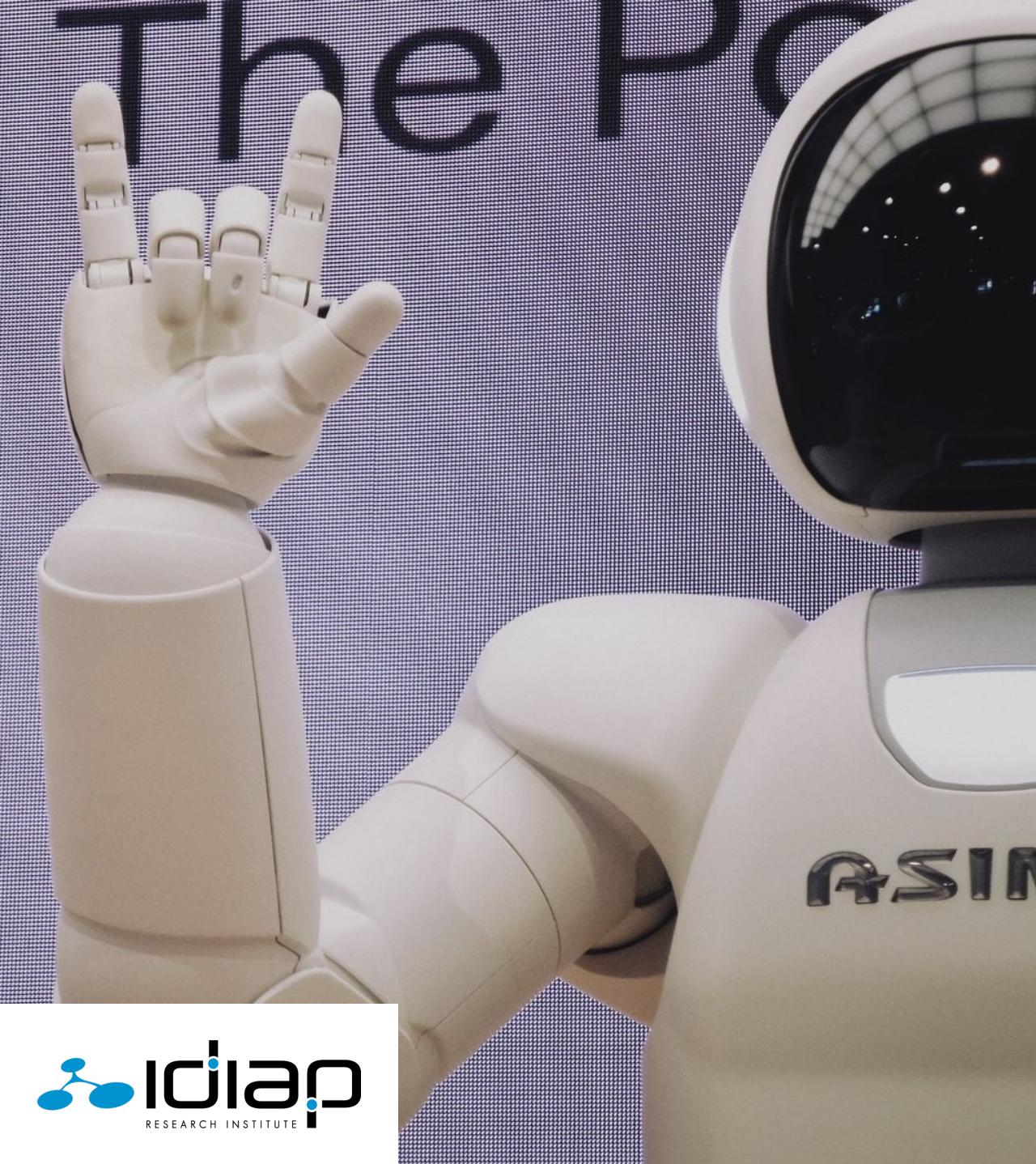
Teams of engineers, developers, designers, and creatives come from all around the world.

**VIDEO OF OUR  
2020 EVENT**

[HTTPS://YOUTUBE/SMFV7MJPYMO](https://youtu.be/smfv7mjpymo)

THAT WILL CHANGE THE WORLD





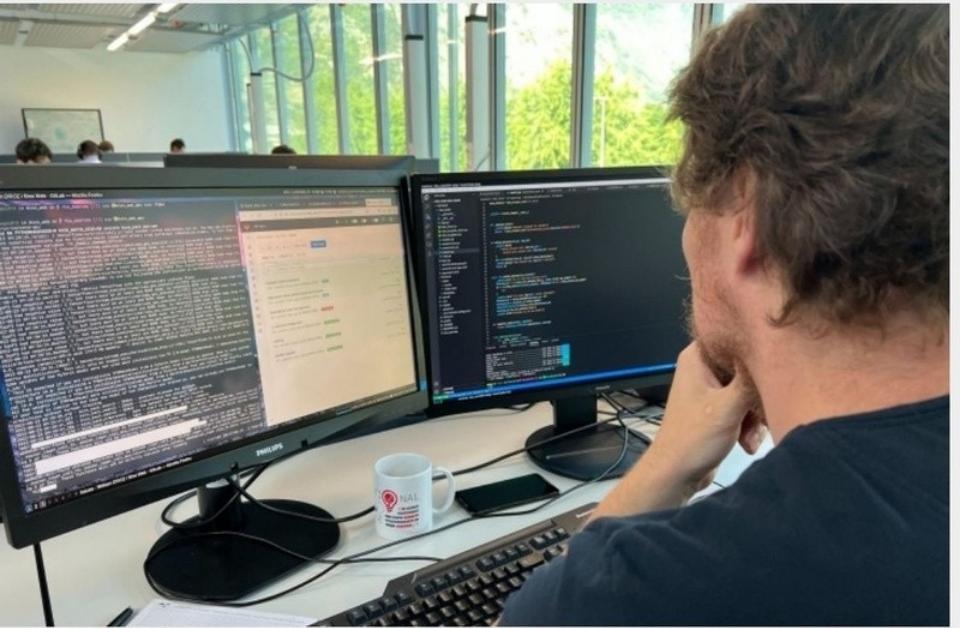
WE'VE BEEN  
DOING AI  
SINCE  
BEFORE IT  
WAS  
CALLED AI.

---

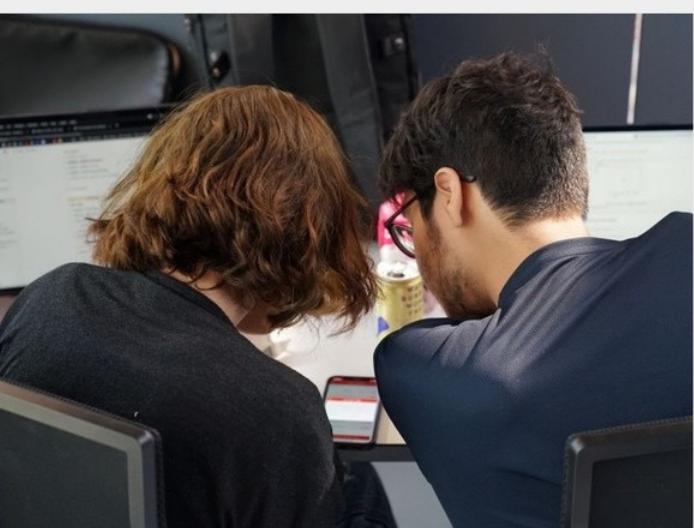
Founded in 1991, Idiap is a Swiss, independent, not-for-profit research institute. Our 150 scientists and engineers collaborate with leading universities and companies around the world. We are deeply rooted in the local entrepreneurship and innovation ecosystem. Our mission: developing Artificial Intelligence to the benefit of Society



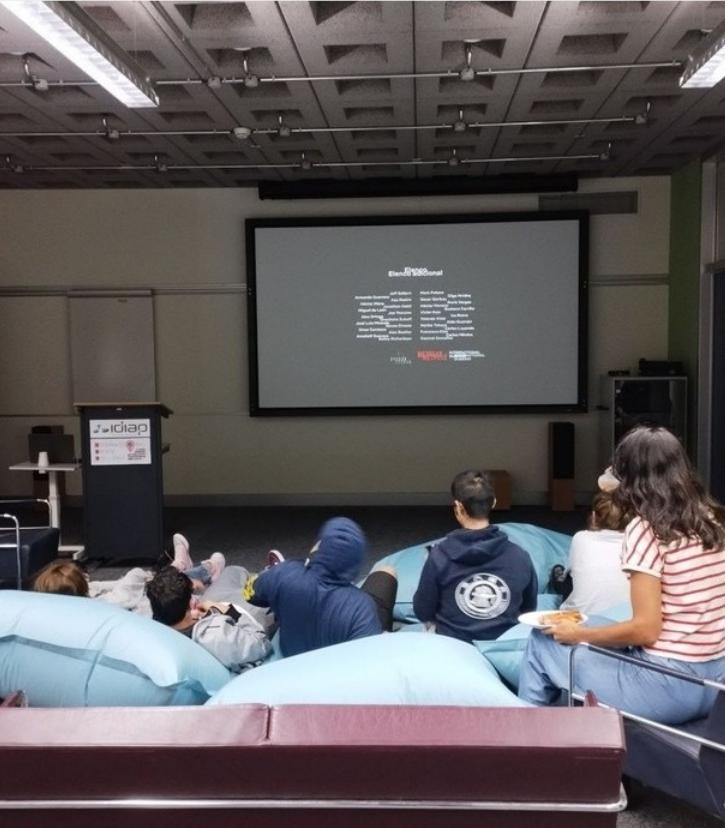
# Hacking



# Team work



# Lots of fun



# Food



## PRIZES



BEST  
TESTIMONIAL  
VIDEO



**5K**



**5.5K**



FUNNIEST  
TEAM  
PICTURE



# REGISTER TODAY!

Registration Deadline: **May 1st, 2024**

🌐 [www.createchallenge.org](http://www.createchallenge.org)

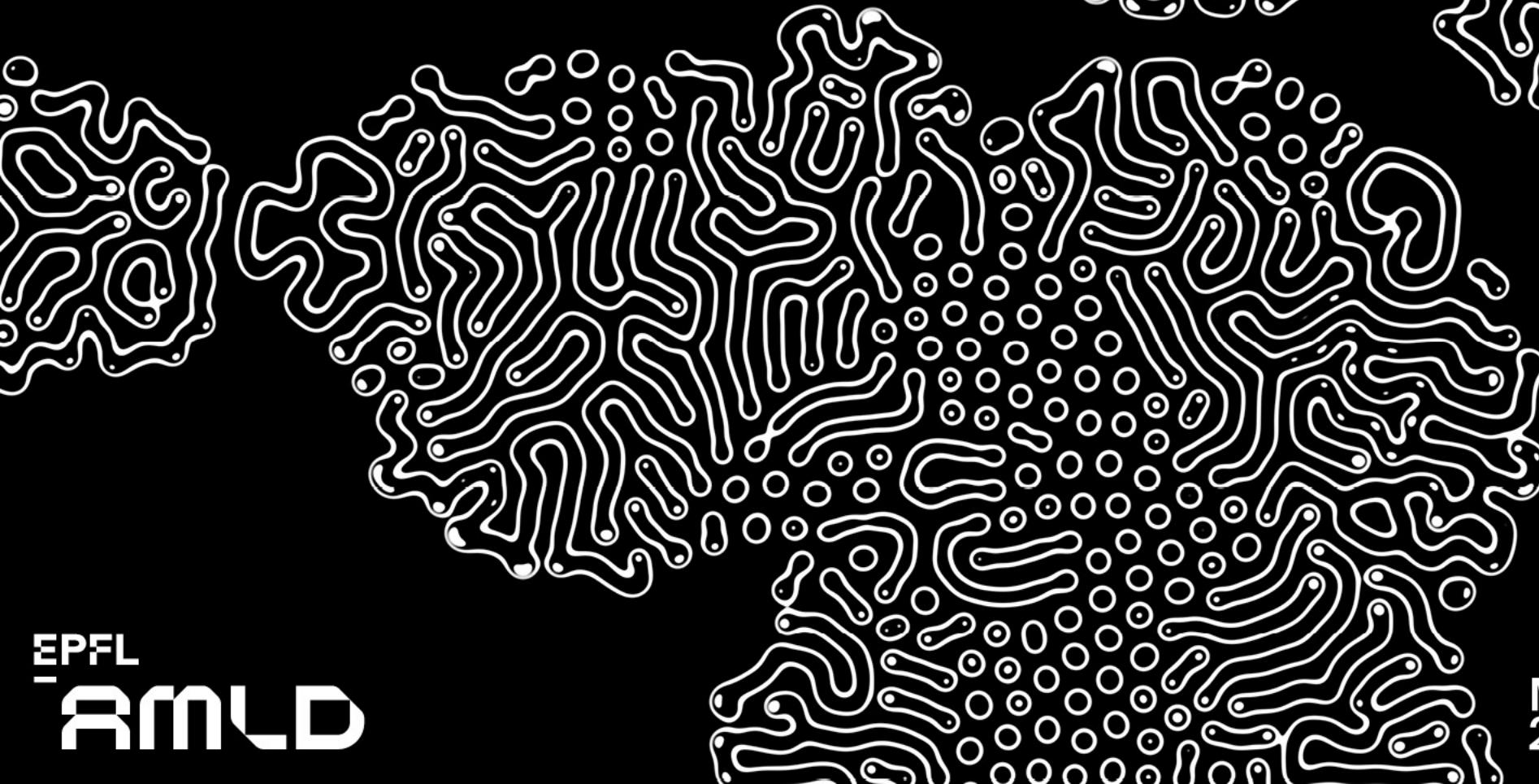
✉️ [contact@createchallenge.org](mailto:contact@createchallenge.org)

LinkedIn icon [ICC - Idiap Create Challenge](#)

# Applied Machine



# Learning Days



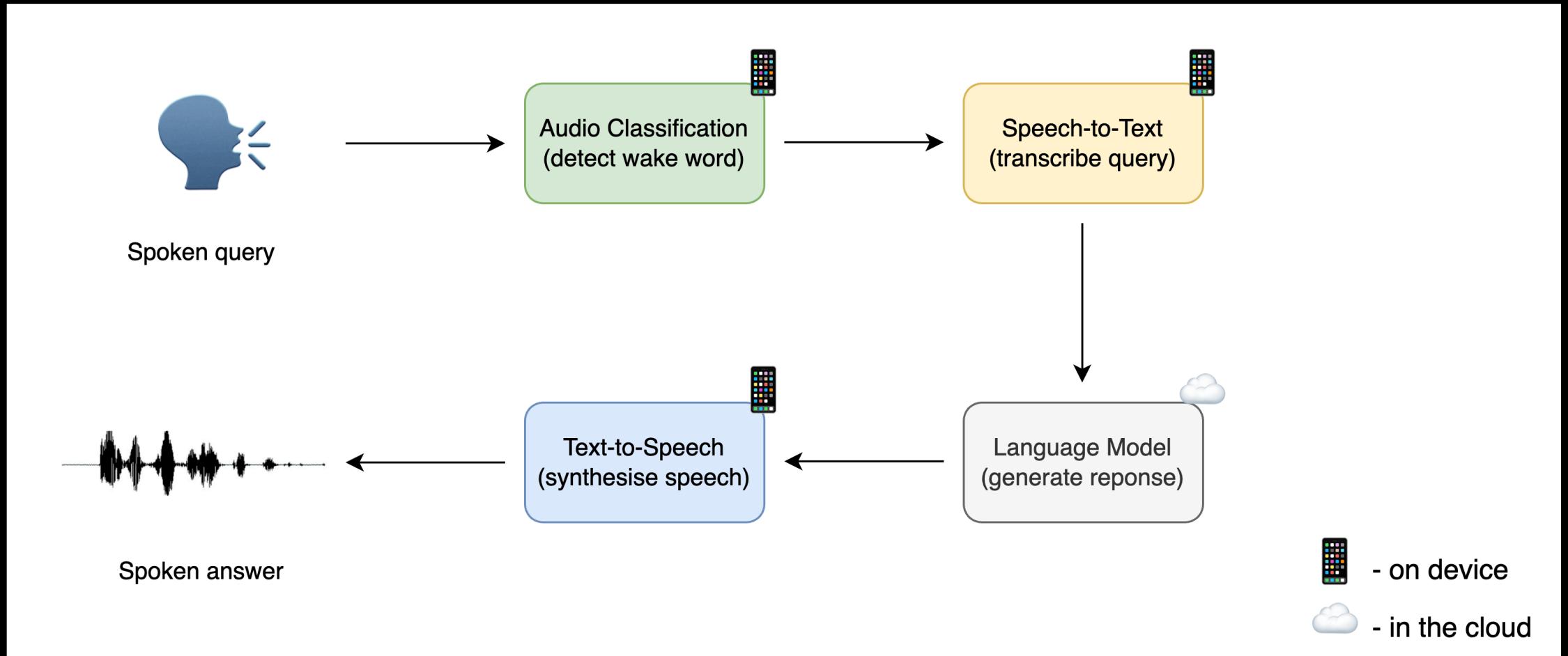


# WORSHOP



*Presentation for* **EPFL**  
**ARMED**

# Creating a voice assistant



# Assessing a speech recognition system

*When assessing speech recognition systems, we compare the system's predictions to the target text transcriptions, annotating any errors that are present.*

We categorize these errors into one of three categories:

1. Substitutions (S): where we transcribe the **wrong word** in our prediction ("sit" instead of "sat")
2. Insertions (I): where we add an **extra word** in our prediction
3. Deletions (D): where we **remove a word** in our prediction



# Assessing a speech recognition system

<b>Reference:</b>	the	cat	sat	on	the	mat
<b>Prediction:</b>	the	cat	sit	on	the	
<b>Label:</b>	✓	✓	S	✓	✓	D

$$\text{WER} = (S + I + D) / N$$

$$\text{WER} = (1 + 0 + 1) / 6$$

$$\text{WER} = 33.3 \%$$

WER could be our evaluation metric for fine-tuning the system





*DESIGNING  
AN EFFICIENT  
PROMPT*

# Engineering the monologue

STORY:

```
"""
Just wakin' up in the mornin', gotta thank God
I don't know but today seems kinda odd
No barkin' from the dog, no smog
And momma cooked a breakfast with no hog
"""
```

We need to write the next chapter of STORY, but let's go through the steps:

1. List the main characters in the STORY, and what their personalities are.
2. What are their arcs so far? Label each one on a scale of 1-10 for how interesting it is, and how important
3. List which arcs are unfinished.
4. List 5 new characters that could be introduced in the next chapter.
5. List 5 potential, fantastical things that could happen - major story beats - in the next chapter.
6. Grade the new characters and the new occurrences 1-10 on how fun they would be, and how much they fit with
7. Write the next chapter.

## Rules

RULES:

1. You need to outline your logical premise in Prolog before each sentence.
2. Write the text as the user, not on behalf of them.

# Few-shot learning

DDL:

```
"CREATE TABLE roads ...."
```

EXAMPLE OBJECT:

```
{ men: 12 }
```

Human: Provide an SQL query to answer this question: 'How many seas are there?'

Assistant: `SELECT COUNT(*) FROM seas`

Human: Provide an SQL query to answer this question: 'How many of those are sailable by a d

Assistant: `SELECT COUNT(*) FROM seas WHERE size_metres_2 < 10`

Human: Provide an SQL query to answer this question: 'Scratch that. How many road are there

Assistant: `SELECT COUNT(*) FROM roads`

Human: Provide an SQL query to answer this question: 'Scratch that. {{user\_question}}'

Assistant:



<https://olickel.com/everything-i-know-about-prompting-langs>

# Context-generated questions

Q:

Si vous deviez conclure une **nouvelle assurance vie** (3e pilier), auprès de quelle entreprise le feriez-vous ? Citez le nom de l'entreprise et expliquez pourquoi.

A:

**Retraites Populaires** m'a accompagnée dans le choix de mon troisième pilier dès le début et a su être patient et à l'écoute dans toute la démarche.

*Create a layer based on LLM generate a question based on the context*



# Entity extraction

Q:

Si vous deviez conclure une **nouvelle assurance vie** (3e pilier), auprès de quelle entreprise le feriez-vous ? Citez le nom de l'entreprise et expliquez pourquoi.

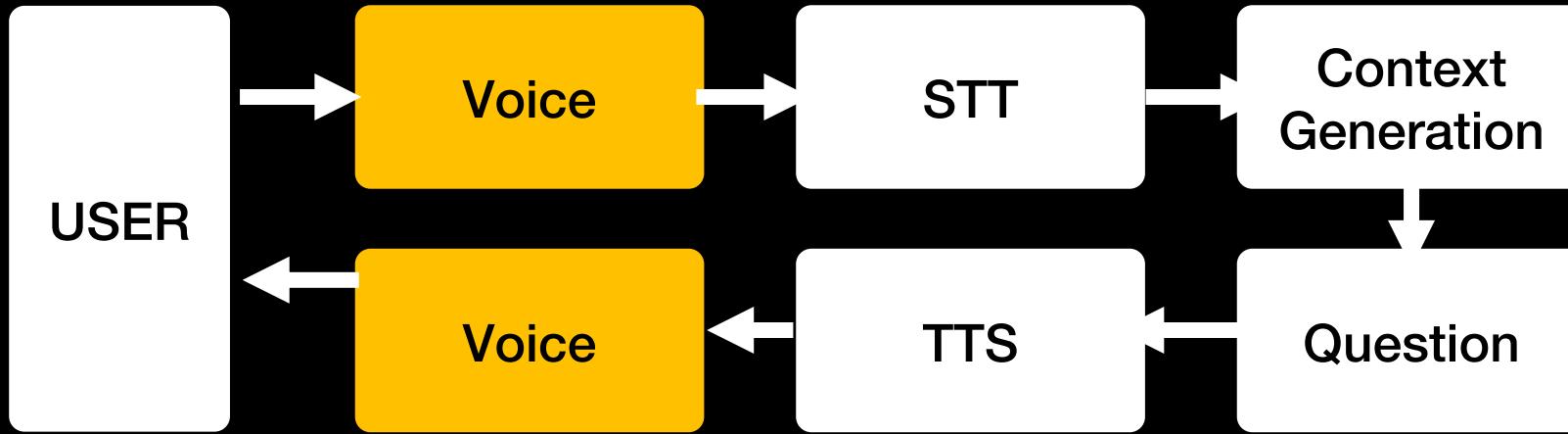
A:

**Retraites Populaires** m'a accompagnée dans le choix de mon troisième pilier dès le début et a su être patient et à l'écoute dans toute la démarche.

*Create a layer based on LLM to trigger the life insurances in the response*



# Complete vocal Agent



*Based on the last response, build the AI vocal full agent*



# Complete vocal Agent

- 1 – Set-up the application and packages
- 2 – Set-up your OpenAI key (**OPENAI\_API\_KEY =** )
- 3 – Import your context-based prompt to prompts (base\_template)
- 4 – Set-up the first pivot question in : « *st.session\_state.jd\_history* »
- 5 – Launch with !streamlit run interviewer.py

*Build a sentiment analysis agent able to sort the responses by sentiments*



# Sentiment analysis

*EXPLORATORY*

*Build a sentiment analysis agent able to analyse and classify the response*



# Applied Machine



# Learning Days

