Some say that digital technology is a threat to our humanity… Yes, we do build more and more efficient AI. Yes, we do record more and more data about our own behavior. And yes, using these new data and these new algorithms makes it possible to predict our behaviors, and sometimes to influence them for commercial or ideological purposes. But at the same time, these very tools bring us closer to a better understanding of ourselves, of our emotions, and of our health.

During this thematic sequence, you will discover how to put digital technology at use for the benefit of humans, and how face, voice and cerebral activity analysis lets us improve our daily life.

With the tools you'll learn to master, you'll be able to merge data from multiple sensors, such as image, sound, and heart activity, to reveal the emotions and intentions behind the appearances. These approaches help to better understand some illnesses such as depression, post-traumatic stress disorder, or autism spectrum disorders; and imagine the solutions of tomorrow for these major societal challenges.

During this sequence, you will put your skills into action by taking part in an international research challenge on emotion recognition. For this project, you'll form a group with your classmates, and you will focus on a specific topic: face, voice or movements analysis. Your algorithm will rely on a large set of real, representing people in action, and it will be up to you to automatically determine their psychological state.

Hence, you'll have to choose and apply specific methods seen during the image and sound analysis course. The classification and regression tools such as SVM or neural networks will lead to the implementation of optimization algorithms, which you will see in the generic course of the sequence.

If you think you can help diagnose and treat people thanks to digital approaches, join this storyline to learn about practical applications, the latest advances in research, and the medical goods and services of tomorrow.

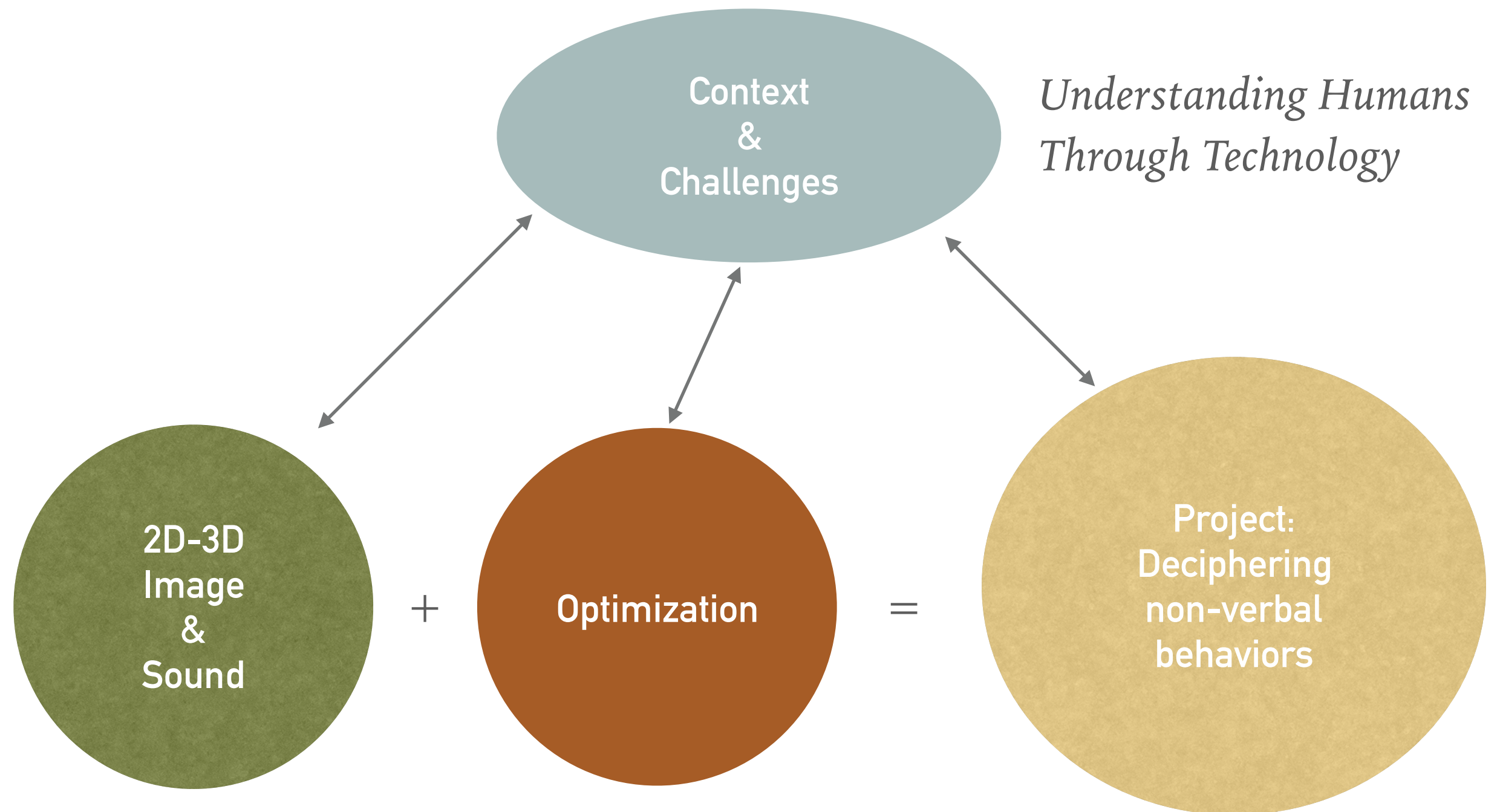# ORGANISATION

*Understanding Humans
Through Technology*

Catherine SOLADIE

SCHEDULING

February 8 to April 9

ST ORGANIZATION

Context & Challenges

Some say that digital technology is a threat to our humanity… Yes, we do build more and more efficient AI. Yes, we do record more and more data about our own behavior. And yes, using these new data and these new algorithms makes it possible to predict our behaviors, and sometimes to influence them for commercial or ideological purposes. But at the same time, these very tools bring us closer to a better understanding of ourselves, of our emotions, and of our health.

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2D-3D Image & Sound

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Project: Deciphering non-verbal behaviors

During this sequence, you will put your skills into action by taking part in an international research challenge on emotion recognition. For this project, you'll form a group with your classmates, and you will focus on a specific topic: face, voice or movements analysis. Your algorithm will rely on a large set of real, representing people in action, and it will be up to you to automatically determine their psychological state.

Optimization

Hence, you'll have to choose and apply specific methods seen during 3D image and sound analysis course. The classification and regression tools such as SVM or neural networks will lead to the implementation of optimization algorithms, which you will see in the generic course of the sequence.

If you think you can help diagnose and treat people thanks to digital approaches, join this storyline to learn about practical applications, the latest advances in research, and the medical goods and services of tomorrow.

SCHEDULING

Date	Starts at	Ends at	Who?	Subject	From
2021-02-08	13:30	14:15	Catherine Soladié	Prepare questions for the interviews with industrials and researchers	CentraleSupelec, teacher & researcher. Cofounder of Immersive Therapy
	14:15	15:15	Renaud Seguier	Overview of AIMAC research team and the link with industrials and hospitals	CentraleSupelec leader of AIMAC team, Cofounder of Immersive Therapy and Dynamixyz
	15:15	15:30		PAUSE	
	15:30	16:45	Catherine Soladié	Introduction to the thematic sequence	CentraleSupelec, ST organizer
2021-02-15	13:30	14:30	Catherine Soladié	Choice and project organisation	CentraleSupelec, ST organizer
	14:30	15:30	Lilian Delaveau	Industrial Use Case	Supelec engineer Cofounder & CEO of Immersive Therapy
	15:30	15:45		PAUSE	
	15:45	16:45	Morgan Casanova	From research to industry and hospitals	CentraleSupelec, Research Engineer
2021-02-17	13:30	14:00	Marie Pirotais	Industrial Use Case	CEO and cofounder of Biosency
	14:00	14:30		PAUSE	
	14:30	16:00	Pablo Arias	A cross-domain background	Cross-domain Postdoc Multimedia engineer, master in acoustic, PhD in cognitive science.
	16:00	16:45	Catherine Soladié	Conclusion on context and challenges	CentraleSupelec, ST organizer

HINDSIGTH NOTE

Context & Challenge

HINDSIGHT NOTE OF CONTEXT & CHALLENGES

Context & Challenges – Hindsight note

You have to write a reflexion note at the end of the introductory sequence of your ST7, which will be reviewed by your classmates.

Your note of a maximum length of 2 pages (approximately 6500 characters - headings, notes, signatures, spaces included) will be written in English and will cover the following items:

- Description and understanding of the topic
- Economic, social, industrial, current and future issues / challenges
- Major scientific and technological challenges
- Key areas of innovation for engineers

Special emphasis will be put on the clarity of this hindsight note.

Important dates :

Upload of your report : **Friday, February 24th, 2021** 23:00 at the latest, strict deadline

Peer review grading : between **February 26th and March 3rd 2021** at 23:00 at the latest, strict deadline.

More information on peer review

Hindsight note - context & challenge

QUESTIONS ?

> Blessed is he who expects nothing,
> for he shall never be disappointed.

-*Alexander Pope*