



SPRING SCHOOL

SOCIAL XR

March 13-17, 2023 | Amsterdam

Hosted by DIS @ CWI



Program





Contents

Welcome	1
Venue & Location	3
About CWI	4
About the DIS Group	5
Practical Information	6
Program Overview	10
Detailed Program	12
Organizers	17
Sponsors	19
Notes	20



Welcome

Dear Student,

Welcome to the 1st Spring School on Social XR!

It gives us great pleasure to welcome you to the first edition of our spring school on Social XR in Amsterdam, The Netherlands.

We believe that the future of media communication is immersive, and will empower sectors such as cultural heritage, education, manufacturing, and provide a climate-neutral alternative to travelling in the European Green Deal. With such a vision in mind, we have created a holistic program around the research topic of Social XR. The program includes keynotes and workshops, where prominent scientists in the field will share their knowledge with us and trigger meaningful conversations and exchanges. The program includes topics such as the capturing and modelling of realistic avatars and their behaviour, coding and transmission techniques of volumetric video content, ethics for the design and development of responsible social XR experiences, novel rendering and interaction paradigms, and human factors and evaluation of experiences.

Together, they will give us a holistic perspective, helping us to better understand the area and to initiate a network of collaboration to overcome current limitations of current real-time conferencing systems. Apart from science, there is always time for fun, so a number of social events will take place as well.

We hope you enjoy the program we have carefully curated, and a week full of inspiring talks, insightful conversations, and entertaining social events.

The organizers,

Irene Viola, CWI
Silvia Rossi, CWI
Omar Niamut, TNO
Pablo Cesar, CWI

Venue & Location

The spring school on Social XR will take place at Centrum Wiskunde & Informatica (CWI).



CWI is located at Science Park 123, 1098 XG Amsterdam. The street name Science Park has been in use since 2011. Amsterdam Science Park is one of the largest concentrations in exact sciences in Europe. It is a hub for research, innovation and entrepreneurship and home of world class research institutes, universities and more than 130 companies, from science based start-ups to multinationals. With over 10,000 students, scientists and entrepreneurs, the park offers excellent opportunities for research and businesses. Amsterdam Science Park is a joint development by the University of Amsterdam, the City of Amsterdam and the Netherlands Organization for Scientific Research (NWO).

Address

CWI, Science Park 123
1098 XG Amsterdam, NL

Phone

+31 (0) 20 592 9333

E-mail

info@cw.nl

About CWI

Centrum Wiskunde en Informatica (CWI) is the national research institute for mathematics and computer science in the Netherlands, established in 1946.



By creating synergy between mathematics and computer science, CWI works on fundamental and long-term innovation. That innovation takes place in various areas including energy, healthcare, climate, communication, mobility and security.

The institute built the first Dutch computer, calculated the heights for the Delta work embankments, and connected Europe to the Internet. CWI developed the algorithms used on the Dutch rail network system and three-dimensional techniques for detecting tumours. Python, a programming language extensively used throughout the world, was also developed by CWI. A total of 26 spin-off companies have so far emerged from CWI.

About the DIS Group



Our research group focuses on facilitating and improving the way people use interactive systems and how people communicate with each other. We combine data science with a strong human-centric, empirical approach to understand the experience of users. This enables us to design and develop next-generation intelligent and empathic systems. We base our results on realistic testing grounds and data sets and embrace areas such as ubiquitous computing, human-centred multimedia systems, and languages.

The group addresses key problems for society and science, following a multi-disciplinary approach. This results in a full-stack methodology that enables us to bridge socio-technical gaps in society and science by instrumenting the appropriate infrastructures and communication protocols using realistic testing grounds.

You can find more information about the group and research projects on our website: <https://www.dis.cwi.nl>

Practical Information

Local Transport

Public Transportation

If you plan on using public transportation every day, you can now check in with your contactless debit card, credit card or your payment app on your mobile phone! (And remember to check out again with the same pass before leave the bus/tram) More info: <https://www.gvb.nl>.

Bus 40 serves Amsterdam Science Park four times an hour from stations Amsterdam Amstel (train, metro, tram) and Amsterdam Muiderpoort (train, tram). Get off at the bus stop 'Science Park' or 'Science Park Aer'. During rush hour bus 240 can be used, too. You can find more information about the timetable on the NS website or on the OV9292 website.

Train

CWI is a five-minute walk away from NS station Amsterdam Science Park. This station is served four times an hour from the directions Amsterdam Centraal – Schiphol and Almere – Amersfoort. Walk through the tunnel after leaving the platform for the science park (northeast exit), cross the street (Carolina MacGillavrylaan) at the crosswalk and walk past the brown building of Amsterdam University College. You will be able to see the CWI's main entrance on your left behind the parking lot. You can find more information about the timetable on the NS website (<https://ns.nl>) or on the OV9292 website (<https://9292.nl>).

Parking

Only limited parking space is available. You can park your car at any parking lot after the gate. Follow the signs to number 123, our main entrance. Parking is paid after one hour. Please hold on to the card you receive when entering the gate; you will need it to leave the terrain.



Registration

Registration is possible on site on Monday 13th March from 09:30 to 11:00 at the entrance of CWI's main building.

Internet

Wi-Fi connection is available throughout the venue through Eduroam secure roaming and an open WiFi network operated by Amsterdam Science Park.

Social Events

Welcome night: dinner and Jeu de Boules (March 13th)

Dinner and game night at Mooie Boules (<https://mooieboules.nl/amsterdam/>) starting at 19:00



Canal cruise with dinner (March 14th)

Step on the boat in front of Café Hesp, Weesperzijde 130-131, 1091 ER Amsterdam (close to Amstel station, Bus 40 from CWI). Boat departs at 19:00.

During the boat tour, an Indonesische Rijsttafel (a variety of Indonesian side dishes served with rice) will be served. The tour will end at Leidseplein.



Visit at Media Museum of Sound & Vision (March 16th)

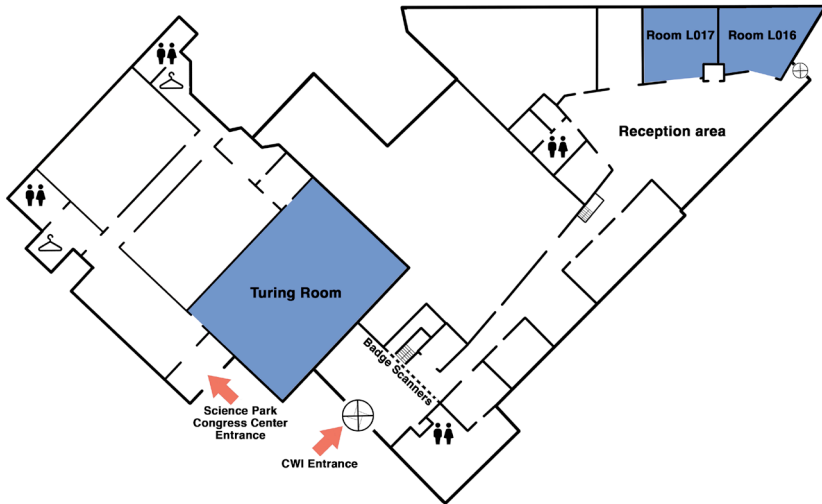
This event is sponsored and organised by Sound & Vision

Guided tour of the new Media Museum of Sound & Vision in Hilversum (<https://www.beeldengeluid.nl/en>), followed by dinner at Mout Restaurant in Hilversum (<https://www.mouthilversum.nl/> - close to the Hilversum station). Bus departs in front of CWI at 16:00.



Floor Plan

The main part of the Spring School will take place in Room L016/L017 at CWI, as shown in the map below.



On Tuesday 14th and Thursday 16th March, the keynotes will be open to the public and held at the Science Park Congress Center next to CWI. More specifically, they will be given in the Turing Room.

Program Overview

	Monday 13th	Tuesday 14th	Wednesday 15th
09:30	Registration	Christian Timmerer: Immersive Video Delivery: From Omnidirectional Video to Holography <i>Keynote</i>	Evangelos Alexiou: Perceptual Quality Assessment of Point Clouds <i>Tutorial</i>
09:45	<i>Other</i>		
10:00			
10:15			
10:30			
10:45			
11:00	Welcome <i>Talk</i>	Sylvia Xueni Pan: Virtual Social Interaction and its Applications in Health and Healthcare <i>Keynote</i>	Jie Li: Design, Develop and Evaluate Social XR Experiences <i>Tutorial</i>
11:15	DJS Lab		
11:30	<i>Talk</i>		
11:45			
12:00	Lunch & Coffee	Lunch & Coffee	Lunch & Coffee
12:15	<i>Other</i>	<i>Other</i>	<i>Other</i>
12:30			
12:45			
13:00			
13:15			
13:30			
13:45			
14:00	Wendy van den Broeck, Johan Oomen, Niall Murray: Discovering Horizon Europe Projects: TRANSMIXR - Ignite the Immersive Media Sector by Enabling New Narrative Visions <i>EU Projects and Standards</i>	Klara Nahrstedt: Navigation and View Management for Interactive 360 Streaming Systems <i>Keynote (remote)</i>	Tilo Hartmann: The Psychology of Social Presence <i>Tutorial</i>
14:15			
14:30			
14:45			
15:00			
15:15			
15:30	Gijs Huisman: Understanding Social Touch in XR <i>Tutorial</i>	Zerrin Yumak: How to Create Virtual Humans and Avatars for Social XR? <i>Tutorial</i>	Mariëtte van Huijstee, Stefan Roelvink: Towards a Responsible Metaverse <i>Tutorial</i>
15:45			
16:00			
16:15			
16:30			
16:45			
17:00	Katherine Isbister: Designing 'Weird' Social Experiences for XR <i>Keynote (remote)</i>		Mar Gonzalez Franco: Movement Remapping as a Solution to Interaction <i>Keynote (remote)</i>
17:15			
17:30			

Social XR | Spring School

	Thursday 16th	Friday 17th
09:30	Mark Billinghurst: Using Empathic Computing to Create Social XR Experiences	María Torres Vega: Enabling Interactive Networked Virtual Reality Experiences
09:45	<i>Keynote (remote)</i>	<i>Tutorial</i>
10:00		
10:15		
10:30		
10:45		
11:00	Natasja Paulssen: Pre & Post for Volumetric Video	Pablo Perez, Jesús Gutiérrez: An Overview on Standardization for Social XR
11:15	<i>Tutorial</i>	<i>EU Projects and Standards</i>
11:30		
11:45		
12:00	Lunch & Coffee	Closing
	<i>Other</i>	<i>Talk</i>
12:15		
12:30		
12:45		
13:00		
13:15		
13:30		
13:45		
14:00	Oliver Schreer: A Journey to Volumetric Video - the Past, the Present and the Future	
14:15		
14:30	<i>Keynote</i>	
14:45		
15:00	Stephen Brewster: eXtended Reality and Passengers of the Future	
15:15		
15:30	<i>Keynote</i>	
15:45		
16:00		
16:15		
16:30		
16:45		
17:00		
17:15		
17:30		



Detailed Program

Monday, March 13th 2023

09:30 | Registration

On-site registration

11:00 | Spring School Opening

The organisers will open the school and present the DIS group.

12:00 | Lunch & Coffee

14:00 | Discovering Horizon Europe Projects: TRANSMIXR - Ignite the Immersive Media Sector by Enabling New Narrative Visions

by Wendy van den Broeck, Johan Oomen, Niall Murray

15:00 | Break

15:30 | Understanding Social Touch in XR

by Gijs Huisman

17:00 | Designing 'Weird' Social Experiences for XR

by Katherine Isbister (remote)

19:00 | Social event I

Dinner at Mooie Boules (Zeeburgerpad 3, 1018 AH Amsterdam, 30 minutes walking from CWI). After the dinner, we have reserved lines to play boules (petanque). Many board games are also available.

Tuesday, March 14th 2023

09:30 | Immersive Video Delivery: From Omnidirectional Video to Holography

This is an open talk and will be held in the Turing Room at the Science Park Congress Center
by Christian Timmerer

10:15 | Break

11:00 | Virtual Social Interaction and its Applications in Health and Healthcare

This is an open talk and will be held in the Turing Room at the Science Park Congress Center
by Sylvia Xueni Pan

12:00 | Lunch & Coffee

A group of posters will be displayed during the lunch break

14:00 | Navigation and View Management for Interactive 360 Streaming Systems

by Klara Nahrstedt (remote)

15:00 | Break

15:30 | How to Create Virtual Humans and Avatars for Social XR?

by Zerrin Yumak

19:00 | Social event 2

Tour (2.5 hours) through the city's canals with Indonesische Rijsttafel.

Wednesday, March 15th 2023

09:30 | Perceptual Quality Assessment of Point Clouds

by Evangelos Alexiou

10:30 | Break

11:00 | Design, Develop and Evaluate Social XR Experiences

by Jie Li

12:00 | Lunch & Coffee

A group of posters will be displayed during the lunch break

14:00 | The Psychology of Social Presence

by Tilo Hartmann

15:00 | Break

15:30 | How to Talk About the Metaverse / Towards a Responsible Metaverse

by Mariëtte van Huijstee, Stefan Roolvink

17:00 | Movement Remapping as a Solution to Interaction

by Mar Gonzalez Franco (remote)

Thursday, March 16th 2023

09:30 | Using Empathic Computing to Create Social XR Experiences

by Mark Billingham (remote)

10:30 | Break

11:00 | Pre & Post for Volumetric Video

by Natasja Paulssen

12:00 | Lunch & Coffee

A group of posters will be displayed during the lunch break

14:00 | A Journey to Volumetric Video - the Past, the Present and the Future

This is an open talk and will be held in the Turing Room at the Science Park Congress Center
by Oliver Schreer

15:00 | eXtended Reality and Passengers of the Future

This is an open talk and will be held in the Turing Room at the Science Park Congress Center
by Stephen Brewster

16:00 | Travel to Social Event 3

A bus will leave CWI to Hilversum. Tour of the Media Museum of Sound & Vision followed by dinner at Mout Restaurant.

Friday, March 17th 2023

09:30 | Enabling Interactive Networked Virtual Reality Experiences

by Maria Torres Vega

10:30 | Break

11:00 | An Overview on Standardization for Social XR

by Pablo Perez, Jesús Gutiérrez

12:00 | Closing



Irene Viola

Irene Viola is a tenure-track researcher within the Distributed and Interactive Systems (DIS) at Centrum Wiskunde & Informatica (CWI). She received her MSc in Computer Engineering from the Polytechnic University of Turin, Italy, in 2015, and her PhD in Electrical and Electronic Engineering from the Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland, in 2019. Her research interest lay in compression, transmission, and QoE metrics and methodologies for immersive multimedia systems. She has served as a QUALINET chair for the task force in Immersive Media Experiences since 2017, and is actively involved in standardization bodies such as MPEG and ITU.



Silvia Rossi

Silvia Rossi is a PostDoc (ERCIM fellow) of the Distributed and Interactive Systems (DIS) group at Centrum Wiskunde & Informatica (CWI) in the Netherlands. She received her BSc and MSc degrees, both in Electronic and Telecommunication Engineering from the University of Bologna - Cesena (Italy) in 2013 and 2016, and her Ph.D from UCL, London (UK) in 2022. Her PhD topic was “Understanding user interactivity for the next-generation immersive communication: design, optimisation, and behavioural analysis”. She is also an active member of the multimedia community being part of the Special Interest Group of Multimedia (SIGMM) Records team. Truly passionate about multimedia and technology, her research interests are at the crossroad between multimedia processing, data processing and analysis, machine learning, and communication systems.



Omar Niamut

As Director of Science at TNO ICT, Omar Aziz Niamut guides TNO researchers in the development of key enabling digital technologies, such as AI, cyber and crypto, data sharing, digital infrastructure and quantum. He has led the research on social XR at TNO and has build a solid knowledge and technology position for Dutch companies to become active around metaverse developments. He has over 20 years of experience in developing media technologies and has over 40 patent applications. His research on streaming 360-degree video to VR headsets led to TNO start-up Tiledmedia. He recently was awarded a grant from Meta's XR Programs and Research Fund to study the impact of the metaverse on the future of work.



Pablo Cesar

Pablo Cesar has led the Distributed and Interactive Systems (DIS) group at CWI since January 2014 and is Professor of Human-Centered Multimedia Systems in the Department of Intelligent Systems (INSY) at TU Delft. He has received the prestigious 2020 Netherlands Prize for ICT Research. He is IEEE (Institute of Electrical and Electronics Engineers) Senior member, the highest grade for which IEEE members can apply, and ACM (Association for Computing Machinery) Distinguished Member, cited for significant achievements across the computing field recognizing up to 10 percent of ACM worldwide membership. His research focuses on measuring and evaluating the way users interact and communicate with each other using a wide range of decentralized digital systems. Cesar has co-directed over 15 externally funded research projects (H2020, FP7, FP6, PPP, NWO).



March 13-17, Amsterdam

Notes



CWI

Distributed and
Interactive Systems

www.dis.cwi.nl/spring-school