

DesCartes WEEK 2024

DESCARTES FOR INNOVATIVE AND INTELLIGENT URBAN DEVELOPMENT

Singapore - CREATE Tower

30

Sept

MONDAY

Theatrette, Level 2

09:30AM **Welcome Coffee** - Level 2

10:00AM **Welcome Address** - Chamira Lessigny, Deputy Scientific Executive Director, CNRS@CREATE

10:30AM **Roundtable | Smart Cities by CREATE**

- **Juan Angel Acero**, DesCartes (ex SMART)
- **Jonas Joerin**, SEC
- **Tobias Massier**, TUMCREATE

12:00PM **Lunch Break** - Terrace, Level 3

02:00PM **VIP Talk | Prof. Charbel Farhat, Stanford University & ENSAM**

This lecture embarks on an enthralling journey through the profound evolution of numerical modeling and simulation within the realm of engineering applications, tracing its trajectory from the 1960s to the present day. In its nascent stages, these formidable technologies were primarily reserved for the domain of high-value systems such as aircraft, accessible only to a select consortium of industries. However, following the conclusion of the Cold War, numerical technologies — initially forged for military applications — began to permeate consumer markets, significantly broadening their societal impact. Join us as we traverse this exciting saga of technological innovation, uncovering how these advancements continue to reshape the landscape of engineering for generations to come.

03:00PM **VIP Talk | Public Policies** - Dr. Charlotte Halpern, Sciences Po

Presentation of her work and policy approaches, focused on governance, applied to the challenges of managing climate action in cities, using Singapore as a case study.

04:00PM **Coffee Break** - Level 2

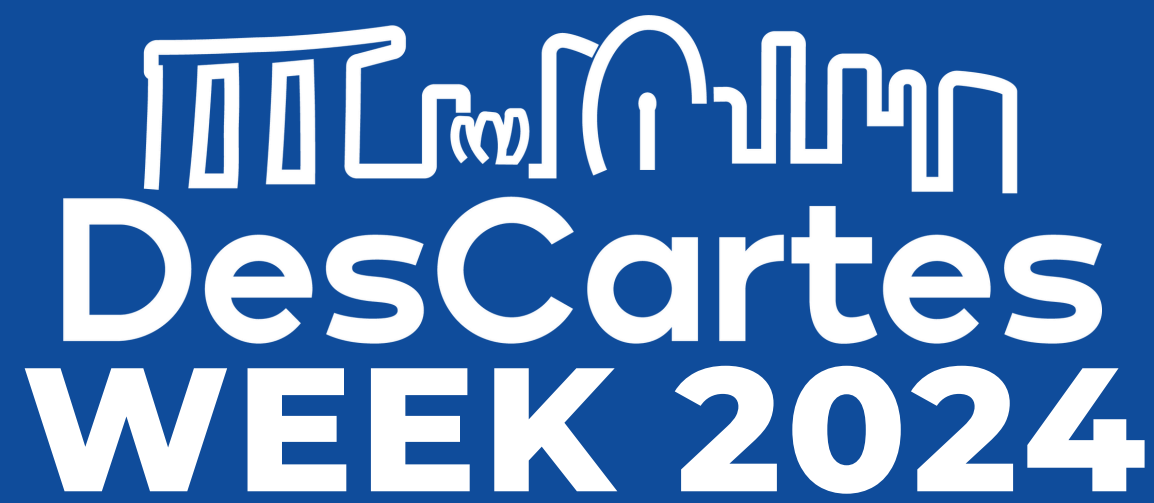
04:30PM **DesCartes Demos** - CREATE Gallery, level 2 and C@C Office, level 8

- **Boid Corner Installation**, Marida di Crosta & Ishmam Ahmed (WPX) - lvl 2
- **DesCartes Augmented 3D-Printed Marina Bay Twin Model**, Nicolas Christie - lvl 8
- **DesCartes Hybrid Digital Twins**, Célia Choimet - lvl 8
- **Desktop Visualization Application for Marina Bay Twin**, Kyaw Zin Htun (WP8) - lvl 2

06:00PM *Departure in bus from CREATE drop-off*

06:30PM **Teambuilding Activity and Dinner**

Prawning at Fish@Ang Mo Kio. 190 Ang Mo Kio Ave 8, Singapore 568046



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01

Oct

TUESDAY

Pinnacle Room, Level 16

09:30AM Talks | Humanities & Social Sciences in DesCartes

- **Do citizens perceive AIs as prosocial and moral agents in Smart cities contexts?** Bahia Guellai (WP6)
- **Behind & Underneath the Making of "AI": Ethnographic Fieldwork in Descartes,** Hydar Saharudin (WPX)

10:30AM Coffee Break - Level 16

11:00AM Talks | Humanities & Social Sciences in DesCartes

- **Trust in AI?** Melvin Chen (WP7)
- **ABC DesCartes, A collaborative, inter- trans-disciplinary project on shared terminology,** Ishmam Ahmed (WPX)

12:00PM Lunch Break - Terrace, Level 13

01:30PM **Workshop | Approaches and methodologies of humanities and social sciences: A focus on ethics of AI and smart cities** - Jennifer Ang & Bahia Guellai (WP6)

In recent years, there has been an increasing attention on human-centric rather than technology-led approaches when developing smart cities. WP6 will present the broad differences in these 2 approaches, and its work on the ethics of AI and smart cities from the disciplines of philosophy, psychology and sociology.

03:30PM Coffee Break - Level 16

04:00PM **Workshop | Responsible hybrid AI regulation** - Amélie Favreau & Freyja Van Den Boom (WP7)

From the drones in smart cities, this workshop looks at ethical values and their influence on technical and legal regulation.

After discussions on ethics, on the recent European legislation on artificial intelligence, on the trust we have in drones and on the risk into account in programming, it's time to play! Based on a future scenario in 2045, the participants will have to discuss the arrival on the market of a new drone... a little surprising!

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WEDNESDAY

Pinnacle Room, Level 16

- 09:30AM **VIP Talk | Jessica Brightman, American Federal Aviation Administration**
Join Jessica Brightman, Manager at the FAA, as she shares her insights on drone regulation and the FAA's approach to Unmanned Aircraft Systems (UAS). This talk will cover:
- FAA's drone definition, regulatory authority, and strategic approach
 - Overview of current drone regulations and ongoing regulatory developments
 - UAS Traffic Management (UTM) and efforts to enable Beyond Visual Line of Sight (BVLOS) operations
 - Ongoing initiatives to support operations, including UTM Key Site Evaluation and the Near-Term Approvals Process
- 10:30AM **Coffee Break - Level 16**
- 11:00AM **Mini Hackathon | How to Train Your Lunar Lander - Ludovic Chamoin & Sharath Ram Kumar (WP8)**
The hackathon aims to introduce the core concepts in Reinforcement Learning, along with the main tools and libraries used in RL research and applications. A hands-on session follows, in which participants try to solve a popular control problem using deep RL. The best performing teams win prizes!
- 12:30PM **Lunch Break - Terrace, Level 13**
- 02:00PM **Mini Hackathon | How to Train Your Lunar Lander (continued) - Ludovic Chamoin & Sharath Ram Kumar (WP8)**
- 03:30PM **Coffee Break - Level 16**
- 04:00PM **Workshop | Responsible hybrid AI data licensing: a speculative game to co-design against future crimes - Jean-Marc Deltorn, Melanie Dulong & Freyja Van Den Boom**
Standardized licenses can effectively govern data and AI, but current open licenses must evolve to address complex rights for hybrid AI input and output data. Open licensing, which protects user rights and the commons, offers benefits like fostering innovation and enhancing transparency in smart cities. As AI integrates more into urban life, it's crucial to proactively address data governance and licensing. But how do we plan for an unpredictable future? Join this workshop to explore how we can co-design protections for (or from!) our future selves!



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Oct

THURSDAY

Pinnacle Room, Level 16

09:30AM **Welcome Coffee** - Level 16

10:00AM **My Thesis in 180 seconds | PIs & Students Presentations**

Each PhD's advisor will have two minutes to introduce the research topic of its student, context & its link to the DesCartes Program before letting the PhD student present its work in more details for three minutes.

12:00PM **Lunch Break** - Terrace, Level 13

02:00PM **My Thesis in 180 seconds | PIs & Students Presentations** (continued)

Each PhD's advisor will have two minutes to introduce the research topic of its student, context & its link to the DesCartes Program before letting the PhD student present its work in more details for three minutes.

04:00PM **DesCartes Builder Presentation** - Eduardo de Conto (WPX)

DesCartes Builder Demo: designing a hybrid twin for the remote sensing use case with the DesCartes Builder.

04:30PM **Coffee Break** - Level 16

05:00PM **Meeting | DesCartes PIs Discussion** - C@C Meeting Room, Level 8

Informal chat on budget & HR update, WPs painpoints, DesCartes Phase 2, and any other topic raised by the participants.

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Oct

FRIDAY

Theatrette, Level 2

09:00AM **WPs Presentations**

Each WP will have 20 minutes to showcase:

- A short synthesis of the past year (10min)
- A technical focus (10min)

10:30PM **Coffee Break - Level 2**

11:00AM **WPs Presentations** (continued)

Each WP will have 20 minutes to showcase:

- A short synthesis of the past year (10min)
- A technical focus (10min)

12:30PM **Lunch Break - Terrace, Level 3**

02:30PM **DesCartes 3-Year Anniversary**

- Overview of the Program's progresses and KPIs,
- DesCartes 2024: a look back on this year's main events and visits,
- Presentation of the ongoing partnerships and discussions with agencies & companies,
- Looking forward: what to expect in the next few years

05:30PM *Departure in bus from CREATE drop-off*

06:00PM **Celebratory Cocktail - CNRS@CREATE 5-Year Anniversary celebration**

Mortar&Pestel, 269 South Bridge Rd, #04-01, Singapore 058818

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GUEST SPEAKERS

Smart Cities by CREATE - Roundtable - Monday 30/09



Juan Angel ACERO

Dr. Juan Angel Acero, an urban climatologist with a PhD in Natural Sciences from the University of Kassel, focuses on applied research in air quality and thermal comfort. He worked at Tecnalia on atmospheric pollution, meteorology, and pollutant dispersion. Since 2007, his research has expanded to human biometeorology, analyzing urban

vegetation, morphology, and typology to improve urban liveability and adapt to climate change. He joined the Cooling Singapore project in 2017 and has been a Senior Researcher at the Singapore-ETH Centre, at the Singapore-MIT Centre as well as at CNRS@CREATE (since September 2024).



Jonas Joerin

Dr Jonas Joerin is the Director of the Future Resilient Systems (FRS) programme hosted by the Singapore-ETH Centre and funded by the National Research Foundation of Singapore.

Jonas holds a PhD from Kyoto University, master's degree from the University of Manchester (UK) and a bachelor's degree from the University of Zurich.

His academic background is in geography, environmental management and disaster management. His research interests are in understanding human-environmental processes, with a particular focus on analysing the resilience of individuals in the context of hazards.

Jonas is active in contributing to the research fields of community and social resilience as well as food system resilience and has done extensive field work in several countries in Asia, Africa and Europe.

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GUEST SPEAKERS



Tobias Massier

Tobias Massier joined TUMCREATE as Principal Scientist in 2013, leading the Energy and Power Systems Group and coordinating the “Singapore's Pathway to Carbon Neutrality” project since 2022. He has built a research team, secured funding, and established collaborations in power systems and electric mobility. Previously, he managed the creation of a

Power Engineering Master's program at the Technical University of Munich. Tobias holds an M.Sc. and PhD from the Technical University of Munich, where his research focused on the structural analysis of analogue integrated circuits.

VIP Talk - Monday 30/09



Charbel FARHAT

Charbel Farhat is the Vivian Church Hoff Professor of Aircraft Structures at Stanford University, where he also directed the Aeronautics and Astronautics department and the Stanford-KACST Center of Excellence. He has served on key advisory boards, including the U.S. Air Force Scientific Advisory Board and the Space Technology Roundtable.

A highly cited author and a fellow of several professional societies, Farhat has received numerous prestigious awards, including the Vannevar Bush Faculty Fellowship and honors from the French government. He is an expert in fluid-structure interaction, computational mechanics, and supercomputing, with over 650 publications.

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GUEST SPEAKERS

VIP TALK - Monday 30/09



Charlotte Halpern

Dr. Charlotte Halpern, a tenured researcher at Sciences Po, specializes in state restructuring, policy change, and policy instruments, with a focus on environmental, transport, and urban policies in Europe and South America. She leads projects like CREATE (Horizon 2020) on congestion reduction and MEGOWAS on water governance. She has co-edited

several books and published extensively in academic journals. Dr. Halpern teaches public policy analysis and urban governance, and has held research positions at institutions like Oxford and the Max-Planck Institute. She is also an associate researcher at PUCP in Lima, Peru.

VIP Talk - Wednesday 02/10



Jessica Brightman

Jessica Brightman is the Manager of the Implementation Branch in the FAA's UAS Integration Office, overseeing strategic initiatives like UAS Traffic Management, Beyond Visual Line of Sight (BVLOS) rulemaking, and remote identification (RID) implementation. Since joining the FAA in 2018, she has held roles as Acting Manager and Lead Commu-

nications Specialist. Before that, Jessica worked at the U.S. Environmental Protection Agency and the Internal Revenue Service. A former U.S. Air Force pilot, she flew C-5 Galaxy aircraft and is a certified Airline Transport Pilot. She holds a B.S. in Mathematics and an MBA. Safety & Integration Division of the UAS Integration.