5th International

NEUROERGONOMICS Conference

8-12 JULY 2024
Bordeaux – France

Welcome

We are very happy to welcome you in the historical buildings of the University of Bordeaux, in the heart of the French city of Bordeaux (a UNESCO World Heritage urban center) for the 5th International Neuroergonomics Conference on July 8-12, 2024, following the success of the previous Neuroergonomics conference editions.

The 2024 Neuroergonomics Conference (NEC'24) showcases a wide range of neurotechnologies and explores how these technologies benefit various fields, such as enhancing the performance of human operators, impaired patients, elderly or athletes. Moreover, it delves into cutting-edge concepts like brain-computer interfaces, neurofeedback, neurostimulation, or mixed/virtual reality. By incorporating a diverse lineup of speakers and topics, the 2024 Neuroergonomics program fosters a meeting culture that encourages the exchange of fresh ideas and facilitates meaningful connections. Overall, we are very happy to welcome over 200 participants to this conference edition, which includes over 12 pre-conference workshops, more than 110 technical papers presentations (as talks or posters) and 6 internationally reknown invited speakers. We believe this is a testimony to the dynamism and richness of the Neuroergonomics community.
We thus wish you all a very productive, enjoyable and inspiring conference.

The NEC'24 conference co-chairs
Camille Jeunet-Kelway & Fabien Lotte

Detail Program

Monday, July 8, 2024

Pre-conference workshop/tutorials : 02 PM – 06 PM

03:00 pm – 05:00 pm
Designing Brain-Computer Interfaces with Open-Source Tools: from theory to real-life scenarios
Speakers: Kalou Cabrera Castillos / Frederic Dehais / Pierre Clisson / Marie-Constance Corsi / Arthur Desbois

02:00 pm – 06:00 pm
Decoding Cognitive Workload: A Passive BCI Hackathon
Speakers: Evy van Weelden / Maryam Alimardani / Travis J. Wiltshire

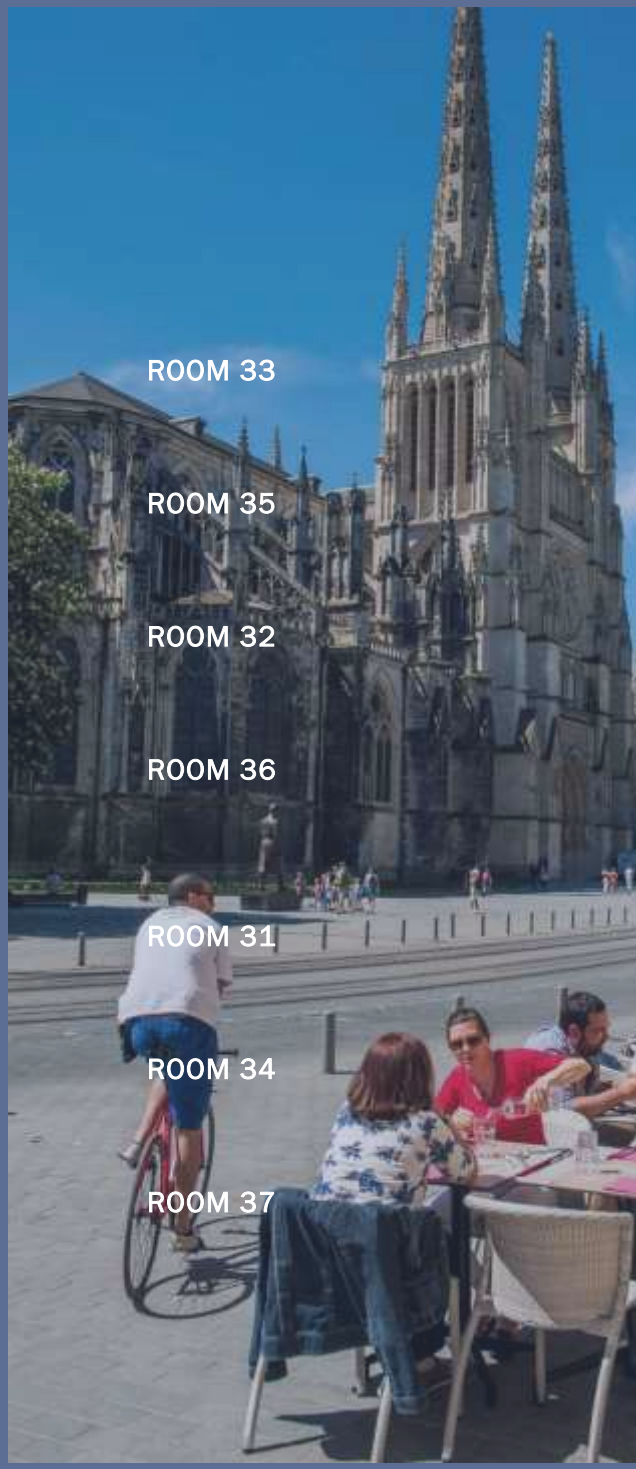
02:00 pm – 06:00pm
Workflows for sharing multimodal recordings in BIDS format
Speakers: Lukas Gehrke & Sein Jeung

02:00 pm – 06:00 pm
The EU AI Act and the future of emotion recognition in Neuroergonomics
Speakers: Andreas Hauselmann / Lucas Noldus / Stephen Fairclough / Nicolas Blanc / Guilio Mecacci
Chair : Mathias Vukelic & Anne-Marie Brouwer

02:00 pm – 05:00 pm
Get Started with OpenViBE
Speakers: Laurent Bougrain / Léa Pillette / Thomas Prampart

02:00 pm – 05:00 pm
Functional Near Infrared Spectroscopy Workshop
Speakers: Adrian Curtin / Sebastien Scanella / Hasan Ayaz

03:00 pm – 05:30 pm
Neurophysiological assessment to enhance neuroergonomics in operational environments
Speakers: Gianluca Borghini & Eduardo Bellomo



Tuesday, July 9, 2024

Pre-conference workshop/tutorials: 08 AM – NOON

09:00 am – 11:00 am
Designing Brain-Computer Interfaces with Open-Source Tools: from theory to real-life scenarios — ROOM 36
Speakers: Kalou Cabrera Castillos / Frederic Dehais / Pierre Clisson / Marie-Constance Corsi / Arthur Desbois

08:00 am – Noon
Decoding Cognitive Workload: A Passive BCI Hackathon — ROOM 35
Speakers: Evy van Weelden / Maryam Alimardani / Travis J. Wiltshire

09:00 am – Noon
OpenViBE for wannabe experts — ROOM 32
Speakers: Axel Bouneau / Laurent Bougrain / Arthur Desbois / David Trocellier / Léa Pillette / Thomas Prampart

08:00 am – Noon
Multimodal hyperscanning in the context of team performance — ROOM 33
Speakers: Hasan Ayaz / Ivo Stuldreher / Ravi Kanth / Suzanne Dikker / Michael Tolston / Erik Frijters

08:00 am – Noon
Neuroergonomics in Aviation: Assessing Human Performance from Lab to Operational Environment — ROOM 31
Speakers: Assaf Harel / Cengiz Acartürk / Kurtulus Izzetoglu

08:00 am – Noon
Exploring Neuroadaptive Technologies through Passive BCI — ROOM 37
Speakers: Thorsten Zander / Marius Klug / Eduardo Bellomo

Noon – 01:30 pm	LUNCH	COUR D'HONNEUR
01:30 pm – 02:00 pm	OPENING SESSION	AUDITORIUM DENIGES
02:00 pm – 03:00 pm	KEYNOTE LECTURE: Klaus-Robert Müller, *"Machine Learning and AI for the Sciences: Toward Understanding"*	AUDITORIUM DENIGES
03:00 pm – 05:00 pm	POSTER SESSION 1	COUR D'HONNEUR
From 05:30 pm to 10:00 pm	WELCOME RECEPTION	COUR D'HONNEUR

Wednesday, July 10, 2024

08:00 am – 08:30 am	**PLENARY LECTURE:** Selina Wriessnegger, *"Towards engaging neuroadaptive environments: Examples & Challenges"*	**AUDITORIUM DENIGES**
08:30 am – 09:30 am	**PLENARY WORKSHOP** by Diamond sponsor Bionic	**AUDITORIUM DENIGES**
09:30 am –10:00 am	**COFFEE BREAK**	**ATRIUM + COUR D'HONNEUR**
10:00 am – Noon	**ORAL PRESENTATIONS - SESSION 1a:** Augmented Reality, Virtual Reality & Human-Computer Interaction	**AUDITORIUM DENIGES**

SHET: A Visual Analytics Tool to Explore Brain Activity with fNIRS in Augmented Reality Tasks	*Sonia Castelo*
VR in Pain Management: an fNIRS Study	*Gülnaz Yükselen*
Neural Interface Technology for Haptic Realism in Virtual Reality	*Lukas Gehrke*
EEG Biomarkers of VR Embodiment in BCI training	*Athanasios Vourvopoulos*
Explainable AI in Collaborative Decision-Making	*Marion Korosec-Serfaty*
When Interacting With AI, Make Me Think	*Alexander John Karran*
Bioinspired adaptive spatial map for prosthesis control	*Bianca Lento*
In an optimal balance: Using an implicit EEG-based method to uncover individual flow experiences	*Anna Vorreuther*

	ORAL PRESENTATIONS - SESSION 1b: Cognitive & Motor Enhancement	**AUDITORIUM - E -**

Improving surgical performance with mental rehearsal: a fNIRS study	*Hemel N Modi*
Training Self-Control: Effects of Parietal Feedback on Performance in Temporally Irregular Vigilance Tasks	*Salim A Mouloua*
Investigating the overlap of ERD/ERS modulations for a Median Nerve Stimulation-based BCI	*Sébastien Rimbert*
Neurofeedback for improving motor performance: Downregulation of EEG beta-band activity can increase motor control flexibility	*Emeline Pierrieau*
Neuroergonomic Investigation of Athletic Performance	*Daniel E Callan*
Auricular vs Cervical Vagus Nerve Stimulation for Attention	*Lindsey McIntire*
Integration of Transcranial Direct-Current Stimulation and Functional Near-Infrared Spectroscopy for Neuroaugmentation of Surgical Skills: A Feasibility Study	*Aleksander Dawidziuk*

Noon – 01:30 pm	LUNCH	COUR LEYTEIRE
01:30 pm – 02:30pm	**KEYNOTE LECTURE:** Mariska Vansteensel, *"Opportunities and Challenges of Implanted ECoG-based BCIs for Communication"*	AUDITORIUM DENIGES
02:30 pm – 04:30 pm	POSTER SESSION 2	COUR D'HONNEUR

Thursday, July 11, 2024

08:00 am – 09:00 am	**KEYNOTE LECTURE:** Mitsuo Kawato, *"Advancing Personalized Psychiatry: Leveraging Biomarkers and Neurofeedback"*	AUDITORIUM DENIGES
09:00 am – 11:00 am	POSTER SESSION 3	COUR D'HONNEUR
11:00 am – Noon	PARALLEL SPONSOR WORKSHOP: ANT Neuro	AUDITORIUM DENIGES
	PARALLEL SPONSOR WORKSHOP: Biopac	AUDITORIUM - E -
Noon – 01:30 pm	LUNCH	COUR LEYTEIRE
01:30 pm – 02:30 pm	PARALLEL SPONSOR WORKSHOP: mBrainTrain	AUDITORIUM DENIGES
	PARALLEL SPONSOR WORKSHOP: Mentalab	AUDITORIUM - E -
02:30 pm – 03:45 pm	ORAL PRESENTATIONS - SESSION 2a: Workload	AUDITORIUM DENIGES

Is Subjective Focus a Valid Proxy of Attentional Demands?	*Bojana Bjegojevic*
Workload in Visual Search, a work in progress	*Nikki Leeuwis*
Meta-Analyzing the Mental Resource: A Neuroergonomic Approach	*Salim A Mouloua*
Cognitive control and mental workload in multitasking	*Philippe L.P. Rauffet*
Passive BCI for interruption management in real settings	*Gianluca Borghini*

ORAL PRESENTATIONS - SESSION 2b: Mobile and innovative approaches — **AUDITORIUM - E -**

Step by Step: Navigating Mobile EEG Preprocessing Pathways	*Nadine S J Jacobsen*
The Importance of Environmental Information to Bridge the Gap between Laboratory and Beyond the Lab Measures of EEG based Auditory Perception	*Thorge Haupt*
Mobile EEG vigilance monitoring during automated driving	*Axel H Winneke*
The Neuroergonomic Vision of Project NAFAS	*Thorsten O. Zander*
A modular TD-fNIRS system for many applications	*Ryan M Field*

03:45 pm – 04:15 pm — **COFFEE BREAK** — **ATRIUM + COUR D'HONNEUR**

04:15 pm – 05:30 pm — **ORAL PRESENTATIONS - SESSION 3a**: Emotion & Perception — **AUDITORIUM DENIGES**

EEG-signatures of somatosensory stimuli in autistic adults	*Nektaria Tagalidou*
A new paradigm to study inattentional deafness in auditory-only online experiments	*Clara Suied*
Empathetic Resources: Investigating the Influence of Trait Empathy on Emotio-Cognitive Vigilance	*Salim A Mouloua*
A New Paradigm to Elicit Strong Positive Emotions	*Meredith L. Sprengel*
Brain Activity and Facial Expression based Emotion Assessment in Toddlers with Autism	*Zuhal Ormanoglu*

ORAL PRESENTATIONS - SESSION 3b: Hyperscanning — **AUDITORIUM - E -**

Really Working "Together": Effects of Physical Presence on Synchrony in Expert and Novices during Cooperative E-Gaming	*Adrian B Curtin*
Monitoring engagement in an inaugural lecture	*Anne-Marie Brouwer*
Comparing EEG on interaction roles during a motor task	*Kyungho Won*
Neural and Ocular Correlates of Conceptual Grounding in Verbal Interaction: A Multimodal Hyperscanning Approach	*Efecan Yilmaz*
Student-Instructor Workload in Simulated and Real Flight	*Evy van Weelden*

From 08:00 pm — **GALA DINER** — **BASSINS DES LUMIERES**

Friday, July 12, 2024

09:00 am – 09:30 am	**PLENARY LECTURE:** Laura Marchal-Crespo, *"Towards a meaningful robot-assisted neurorehabilitation experience"*	**AUDITORIUM DENIGES**
09:30 am – 10:00 am	**PLENARY LECTURE:** Fabien Wagner, *"Neuroprosthetic modulation of distributed spinal cord and brain networks for restoring motor and cognitive functions in neurological disorders"*	**AUDITORIUM DENIGES**
10:00 am – 10:15 am	**COFFEE BREAK**	**ATRIUM + COUR D'HONNEUR**
10:15 am – 12:30 pm	**ORAL PRESENTATIONS - SESSION 4a**: Driving, Flying & Navigating	**AUDITORIUM DENIGES**

Automated Driving Systems and Sustained Engagement	*Zoubeir Tkiouat*
EEG-based Markers for Punctual Stress Induced During Manual Driving	*Yohan YA Attal*
Identifying remediation for Passive Driver Fatigue	*Stephanie Dabic*
Tailoring Takeover Requests in Autonomous Driving to Mental Workload	*Tobias Jungbluth*
Driver monitoring during mind wandering	*Florence Mazeres*
Investigating the Effects of Fatigue, Distraction and Increased Mental Workload on Performance of Ship Engine Room Operators: An fNIRS study	*Steve WR Symes*
Open-Access Multi-modal fNIRS Dataset of Expert Pilots and System Engineers Recorded During High Fidelity Simulated Helicopter System Checks, Navigation and Emergency Responses	*Michael J Middleton*
Using fMRI and eye-tracking to investigate the neural correlates of situation awareness during a left-turn crossing while driving	*Moritz Held*
Emotional Detours: Oscillatory Signatures of Emotion and Cognitive Load during Simulated Driving	*Katharina Lingelbach*

ORAL PRESENTATIONS - SESSION 4b: Brain-Computer Interfaces — **AUDITORIUM - E -**

Visual cues can bias EEG Deep Learning models	*David Trocellier*
Agency-preserving Action Augmentation: Towards Preemptive Muscle Control using Brain-Computer Interfaces	*Lukas Gehrke*
Designing the invisible reactive BCI: the StAR-Burst paradigm	*Frédéric Dehais*
One-Class Riemannian EEG Classifier to Detect Anesthesia	*Valérie Marissens Cueva*
An online POMDP-BCI using Burst c-VEP	*Juan J Torre*
Passive code-VEP based Brain Computer Interface to tag attention	*Pietro Cimarosto*
Neurofeedback to improve wakefulness maintenance ability	*Marie Pelou*
Data-driven detection of memory encoding from EEG in an audiovisual task	*Ana Matran-Fernandez*
Rapid Auditory Probes for EEG Workload Monitoring	*Felix Schroeder*

12:30 pm – 12:45 pm	CLOSING SESSION	AUDITORIUM DENIGES
01:00 pm	LUNCH	COUR LEYTEIRE
01:00 pm	EXCURSION ***(optional):*** *departure by bus from La Victoire*	ST-EMILION

POSTER SESSION 1 – Tuesday, July 9, 2024 – 03 :00 pm – 05 :00 pm — COUR D'HONNEUR

1.	Actions-Per-Minute as a Measure of Skill: Investigating its Relationship with Executive Functions in Complex Task Performance	*Quentin Chenot*
2.	Error-related Potentials: Bridging Brains and Bots	*Katharina Lingelbach*
3.	In Silico Study of Hippocampal Neurostimulation	*Maeva N Andriantsoamberomanga*
4.	Self-Supervised Contrastive Learning for EEG	*Michael Bui*
5.	Review of Neurophysiological Methods to Evaluate Mental Workload in Field Studies	*Moussa Diarra*
6.	Neural activations related to energies acceptation: a fNIRS pilot study	*Adolphe J Béquet*
7.	Music with Light Improves Relaxation: An EEG Study	*Chang-Hwan Im*
8.	A comparison of two novel fNIRS motion correction approaches to popular algorithmic methods.	*Hayder Al-Omairi*
9.	A neuroergonomics-based research on relationship between productivity and emotion	*Derya Ide*
10.	Sleep loss decreases tolerance to prolonged moderate acceleration (+3Gz)	*Anaïs Pontiggia*
11.	Benchmarking the Muse PPG sensor with a research grade ECG system in and out of the lab	*Mathias Rihet*
12.	Physiological comparison of on/off-road anger	*Jordan Maillant*
13.	Imperceptible Grating SSMVEP BCI for Spatial Navigation	*Bartu Atabek*
14.	Prediction of Emotional States with an fNIRS based BCI	*Aysenur Eser*
15.	Cerebrovascular Reactivity in Vaso-mechanical Tasks	*Emre Yorgancıgil*
16.	Causal interactions between electro-cortical oscillations and hemodynamics during an auditory task	*Yalda Shahriari*
17.	The physiological expressions of the driver's sadness	*Florence Mazeres*
18.	How emotions influence cognitive control processes : A Transcranial Direct Current Stimulation (tDCS) and EEG study	*Tristan Feutren*
19.	Rough alarms mitigate inattentional deafness phenomenon during piloting-like task: preliminary results	*Florine Riedinger*
20.	Improving Vehicle Surface Inspection with Wearable Technology for Paint Defect Detection	*Carlos Albarrán Morillo*
21.	The Ability of Psychophysiological Monitoring to Recognize Enhanced Cognitive States During Seated, Computer-Based Tasks	*Justin M Laiti*
22.	Enhancing Attentional Control Through Designed Sound	*Carryl L Baldwin*
23.	fNIRS over the garden wall: Cognitive mechanisms underlying naturalistic path-planning and execution in the real world	*Adrian B Curtin*

POSTER SESSION 2 – Wednesday, July 10, 2024 – 2 :30 pm – 04 :30 pm — COUR D'HONNEUR

1.	Visualization and Workload with Implicit fNIRS-based BCI	*Matthew Russell*
2.	Quantum Denoising for BCI: A Study	*Yash Chauhan*
3.	Novel Prosthesis Control Enables Arm Amputees to Reach Naturally	*Aymar de Rugy*
4.	EEG Connectivity Patterns in Left and Right-handed Users during Motor Imagery BCI Control	*Liisa A Kivioja*
5.	A walk in the forest – the effect of locomotion on visual information processing in a naturalistic environment	*Julian Elias Reiser*
6.	Classification of Attention Patterns Using EEG	*Chang-Hwan Im*
7.	Effects of Vestibular Stimulation on VR-Based Bodily Self Consciousness	*Handan Yaman*
8.	Assessment of Mental Workload During Emergency Planning: An fNIRS study	*Kellyann Stamp*
9.	Electrode Reduction for EEG-based Imagined Speech BCI Applications	*Maurice Rekrut*
10.	EEG-based Markers for Passive Driver Fatigue	*Yohan YA Attal*
11.	Decoding mental states in simulated chatbots: a passive brain-computer interfaces and eye-tracking method	*Diana E Gherman*
12.	Investigating the Cognitive Effects of Subliminal Visual Flicker Training at Alpha Frequency: A Novel Approach to Neuromodulation – study protocol	*Clément Blanc*
13.	Classifying mental states using Brain-Computer Interfaces: A systematic review	*Jaime A Riascos*
14.	A Right-Left Pressure Asymmetry in Surgeons: Relationships with Psychophysiological measures	*Hasan Onur Keles*
15.	OUCH! Real-Time Classifier of Mental Workload Facets	*Molly A Kluck*
16.	Observational Error-Related Negativity for Trust Evaluation in Human-Swarm Interaction	*Ehsan Esfahani*
17.	Monitoring the Brain Activity of Youth with Down Syndrome	*Hasan Ayaz*

POSTER SESSION 3 – Thursday, July 11, 2024 : 09 am – 11 am — COUR D'HONNEUR

1.	Multimodal Correlates of Motor Learning in Laparoscopic Surgery Training	*Esra Zeynep Dudukcu*
2.	Comparative Neuroergonomic Analysis of Mental Workload in Industrial Human-Robot Interaction Assembly Task	*Carlo Caiazzo*
3.	Preliminary evaluation of stimulus presentation speed in an ERP-based BCI under RSVP	*Ricardo Ron-Angevin*
4.	Pupillary Activity Dynamics in a Multitask Environment	*Maykel MPG van Miltenburg*
5.	Out-of-Lab BMIs: An Autoencoder for EEG Classification	*Emilien Bonhomme*
6.	tDCS of Cognitive Flexibility and Working Memory	*James Wright*
7.	Exploring Situational Awareness through Mobile Brain/Body Imaging in Virtual Reality Settings	*Yanzhao Pan*
8.	Digital Tools for the Assessment of a Neurological Disease	*Quentin Lesport*
9.	Bionic AR: Stand-alone Augmented Reality System Controlled by Multimodal Biosignals	*Chang-Hwan Im*
10.	Subject Independent Brain-Computer Interface Spelling System	*Onur Erdem Korkmaz*
11.	Monitoring Team Performance	*Emanuela Zhecheva*
12.	Risk for Exercise Addiction and Inhibitory Control	*Darla M Castelli*
13.	Listening Effort Measurement by Pupillometry under Dual-Task Paradigms: The Effect of Auditory Spectral Resolution	*Cengiz ACARTÜRK*
14.	Exploring the validity of physiological measures for cognitive load assessment in Virtual Reality	*Laurent Lacroix*
15.	fMRI validation of GPT-4's ability to recognise Theory of Mind in natural conversations	*Thierry FN Chaminade*
16.	EEG correction with ICA: beneficial for CNN performance?	*Christian Wallraven*
17.	Exploring Airplane Pilots' acceptability of brain stimulation: a Neuroethics qualitative study	*Florine Riedinger*
18.	Toward Enhancing Workspace Awareness Using a Brain-Computer Interface based on Neural Synchrony	*Arnaud Prouzeau*
19.	EEG-based Art Interest Decoding	*Marc Welter*
20.	Exploring the Potential of Sensor Networks in Space Operations Accident Investigation	*Diego Ribeiro Marques*
21.	Integrating Mobile EEG into Neuroergonomic Design: Mental Workload Estimation on Assembly Line Using Convolutional Neural Network	*Miloš Pušica*
22.	Human-Environment Interaction: Multimodal Neuroergonomic Approach in Immersive Real-world Settings	*Kevin L Ramirez Chavez*
23.	Will you score? Motion capture of basketball shooting combined with mobile electroencephalography – on your smartphone	*Miguel Contreras-Altamirano*

GALA RECEPTION

The Gala dinner is scheduled on **Thursday, July 11, 2024** at 8:00 PM.

It will take place at Les Bassins des Lumières. Don’t forget to take a jacket, it can be fresh inside!

Address: Impasse Brown de Colstoun, 33300 Bordeaux

A shuttle will be waiting for you at the "Cité du vin" stop (line B, direction Berges de la Garonne/Claveau) to take you to the Bassins des lumières.

Meet between 7:30 pm and 8:15 pm.

For the return journey, a shuttle will also be available to drop you off at the "Cité de vin" or "Quinconces" streetcar stop (line B) between 11:00 pm and 12:45 am.

8-12 July
2024

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