

Hakim SI-MOHAMMED, PhD

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📍 Born on October 12th, 1993. Algerian.

RESEARCH INTEREST

Brain-Computer Interfaces

Augmented Reality

Virtual Reality

Human-Computer Interaction

Internet of Things

RESEARCH PROJECTS

GENESIS: Leveraging Neuromarkers for Next-Generation Immersive Systems

Project Coordinator

📅 2022 - 2025

- Funding Agency: CHIST-ERA, European Project (success rate 22%)
- Consortium: University of Lille (France), ETH Zürich (Switzerland), Inria (France), Koç University (Turkey), University of Essex (UK)
- Obtained funding: 743k€

PEPCy: Exploiting Perturbation Evoked Potentials for Detecting and Palliating Cybersickness

Project Coordinator

📅 2021

- Funding Agency: INSII, CNRS (France)
- Obtained funding: 9k€

SUPERVISION ACTIVITIES

Co-supervisor on Member of PhD thesis: Arne Van Den Kerchove, PhD Student at KU Leuven (Belgium) and University of Lille

📅 2020 - 2024

- **Topic:** EEG-based visual Brain Computer Interface for gaze-free communication

Supervision, Master Thesis of Maxence Naud (ENSTA Paris)

📅 2021

- **Topic:** Investigating the use of Perturbation Evoked Potentials as Markers of Vection in Virtual Reality

EDUCATION

PhD in Computer Science

INSA Rennes –Hybrid Research Team, Inria Rennes

📅 2016 - 2019

- **Topic:** Design and Study of Interactive Systems based on Brain-Computer Interfaces and Augmented Reality
- **Supervisors:**
Anatole Lécuyer (Main Supervisor), Senior Researcher, Inria Ren
Géry Casiez, Full Professor, University of Lille, Inria Lille
Ferran Argelaguet, Researcher, Inria Rennes
Nicolas Roussel, Senior Researcher, Director, Inria Bordeaux

MSc in Computer Science - Top of my year

Higher National School of Computer Engineering (ESI), Algiers

📅 2011 - 2016

- **Topic:** Machine Learning for Human Activity Recognition

Dipl. of State Engineer in Computer Science Higher National School of Computer Engineering (ESI), Algiers

📅 2011 - 2016

- **Topic:** Assistive Technologies for People with Disabilities – High Honors

Baccalaureate –Mathematics Series– High Honors El-Khansa High School, Tizi-Ouzou

📅 06/2011

PROFESSIONAL ACTIVITIES AND INTERNSHIPS

Postdoctoral fellow at Inria

Inria

📅 01/2020 - 06/2020 📍 Renne, France

- Working on the ANR Project Lobbybot on haptics and Encounter Types Haptic Devices

Research Internship

Microsoft Research

📅 06/2019 - 09/2019 📍 Redmond, Washington, United States

- Using Real-World Inspired Animations to Create Pleasant SSVEP-Based Brain-Computer Interfaces
- **Supervision:** Dr. Andrew Wilson, Dr. Christian Holz

Industrial research project on Home Automation and BCI

Inria Tech

📅 10/2018 - 06/2019 📍 Rennes, France

- Design and Development of Technology Transfer prototype with Orange: Home Automation System combining Brain-Computer Interfaces and Augmented Reality

International Mobility

Institute of Neural Engineering, TU Graz

📅 09/2018 - 12/2018 📍 Graz, Austria

- Visiting PhD Student, working on the detection and exploitation of Error Related Potentials in Virtual Reality
- **Supervision:** Pr. Reinhold Scherer

End of Studies Project

Ailyan, Research Center of “l’Ecole des Mines”

📅 01/2016 - 07/2016 📍 Douai, France

- Realization of a Home Automation System for assisting people with disabilities

Certification in Business Management

Global Business Institute, Kelley School of Business

📅 06/2015 - 07/2015 📍 Indiana University, Indiana, US

- Funded by The Coca-Cola Company and the US Department of State

Summer internship

Ailyan, Research Center of “l’Ecole des Mines”

📅 08/2014 - 09/2014 📍 Douai, France

- Development of an applications launcher adapted for people with disabilities

COMPETITIONS AND AWARDS

ETH Zürich, Postdoctoral Fellowship awardee (withdrawn for current tenured position)

📅 07/2020

2 years of postdoctoral funding (250k CHF)

Best PhD Thesis Award in Computer Science, Rennes 1 Foundation

📅 06/2020

Best PhD Thesis award of Rennes Universities "Design and Study of Interactive Systems based on Brain-Computer Interfaces and Augmented Reality"

Best paper Award, IEEE VR 2020

📅 04/2020

Best paper award for the paper "Detecting System Errors in Virtual Reality Using EEG Through Error Related Potentials"

IEEE 3DUI Contest, Honorable Mention

📅 04/2018

International contest for developing 3DUIs

Finalist of Intel ChallengeMe, Team Leader, Beirut, Lebanon

📅 11/2015

Finalist of MENA region, with the Hestia project, a low-cost Home Automation system based on Cortana (15 finalists on 7000 participants)

Ooredoo – IoT competition, Team Leader, Algiers, Algeria

📅 10/2015

2nd prize winner

Global Business Institute, Kelley School of Business, Indiana University - Team leader, Indiana, USA

📅 07/2015

2nd prize winner of the international competition Among the 100 selected on 13000 applicants

Microsoft Imagine Cup, Team Leader, Manama, Bahrein

📅 06/2015

1st prize winner of the national competition and Semi-Finalist of the MENA Region

SPOKEN LANGUAGES

French	Fully Bilingual	English	Fully Bilingual	Arabic	Fully Bilingual
Berber	Mother Tongue	Spanish	Notions		

COMPUTER SCIENCE SKILLS

Languages and development environments

C# (.NET) JAVA Python C MySQL HTML5 CSS3 JavaScript (jQuery)

Arduino Android HoloLens Unity R OpenVIBE

INVITED TALKS

Les Matinales, Rennes, France, "Brain-Computer Interfaces and Augmented Reality: Towards novel applications"

IEEE VR'2019, Osaka, Japan: Invited-TVCG, "Towards Brian-Computer Interfaces and Augmented Reality: Feasibility, Design and Interaction"

SAP, Walldorf, Germany: "Introduction to Brain-Computer Interfaces"

The Brainstorms, Vienna, Austria: "BCIs and their application in Medicine, Robotics and Home Automation"

International BCI Meeting, Asilomar, California, United States: BCI and Augmented/Virtual Reality

OTHER ACTIVITIES

Adjunct General Secretary, CORTICO the French Society for Research in Brain-Computer Interfaces, 2021

Member of the program committee of:

- IEEE VR
 - Graz BCI International Conference
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Reviewer for the following journals

- IEEE Transactions in Visualization and Computer Graphics
 - IEEE Transactions in Human Machine-Systems
 - MDPI Applied Sciences
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Reviewer for the following conferences

- ACM CHI
 - ACM UIST
 - IEEE VR
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Member of the organizing committee of the following events

- Openvibe Workshop at Neuroergonomics 2021
- Workshop on Combining Mixed Reality and Brain-Computer Interfaces: Challenges and Opportunities at IEEE ISMAR 2020
- CORTICO days, 2019
- "Music and Science Days", 2018. In charge of communication and partnerships
- AFRV 2017 conference, organized by the French Society for Research in Virtual and Augmented Reality. Virtual Reality Hackathon of Inria Rennes, 2017

PATENTS AND PUBLICATIONS

Periodic Motion-based Visual Stimulus

Andrew Wilson, **Hakim Si-Mohammed**, Christian Holz, Andrian KC Lee, Ivan Tashev, Hannes Gamper, Edward Cutrell, David Johnston, Dimitra Emmanouilidou, Mihai Jalobeanu.
US Patent 16780173. 2021

Designing Functional Prototypes Combining BCI and AR for Home Automation

Hakim Si-Mohammed, Coralie Haumont, Alexandre Sanchez, Cyril Plapous, Foued Bouchnak, Jean-Philippe Javaudin, Anatole Lécuyer.
Frontiers in Virtual Reality. **(Submitted)**.

Alfred: the Haptic Butler On-Demand Tangibles for Object Manipulation in Virtual Reality using an ETHD

Victor Mercado, Thomas Howard, **Hakim Si-Mohammed**, Ferran Argelaguet, Anatole Lécuyer.
IEEE World Haptics Conference. 2021.

Detecting System Errors in Virtual Reality Using EEG Through Error-Related Potentials

Hakim Si-Mohammed, Catarina Lopes-Dias, Maria Duarte, Ferran Argelaguet, Camille Jeunet, Géry Casiez, Gernot Müller-Putz, Anatole Lécuyer, Reinhold Scherer.
IEEE VR Conference, 2020. **Best Paper Award**.

Decoding auditory and tactile attention for use in an EEG-based brain-computer interface

Winko W. An, **Hakim Si-Mohammed**, Nicholas Huang, Hannes Gamper, Adrian KC Lee, Christian Holz, David Johnson, Mihai Jalobeanu, Dimitra Emmanouilidou, Edward Cutrell, Andrew Wilson, Ivan Tashev.
International Winter Conference on BCI, 2020.

Defining Brain-Computer Interfaces: A Human-Computer Interaction Perspective

Hakim Si-Mohammed, Ferran Argelaguet, Géry Casiez, Nicolas Roussel, Anatole Lécuyer.
Graz Brain-Computer Interface Conference, 2019.

Towards BCI-based Interfaces for Augmented Reality: Feasibility, Design and Evaluation

Hakim Si-Mohammed, Jimmy Petit, Camille Jeunet, Ferran Argelaguet, Fabien Spindler, Andéol Evain, Nicolas Roussel, Géry Casiez and Anatole Lécuyer.

IEEE Transactions on Visualization and Computer Graphics. 2018.

Brain Computer Interfaces and Augmented Reality: A State of the Art

Hakim Si-Mohammed, Ferran Argelaguet, Géry Casiez, Nicolas Roussel, Anatole Lécuyer.

Graz Brain-Computer Interface Conference, Sep 2017, Graz, Austria.

Toward Intuitive 3D User Interfaces for Climbing, Flying and Stacking

Antonin Bernardin, Guillaume Cortes, Rebecca Fribourg, Tiffany Luong, Florian Nouviale and **Hakim Si-Mohammed**.

IEEE VR Conference 2018. (Short Paper), **Honorable Mention**.