Marc-Aurèle RIVIÈRE

Research Collaboration

PhD student in Computer Science & Cognitive Neuroscience, I design and develop innovative wearable devices to assist Visually Impaired People, leveraging advances in Computer Vision and Human-Machine Interfaces to improve their QoL, autonomy, and safety.

Education

PhD - Cognitive Sciences
University of Rouen-Normandy Rouen, France / Since November 2016

Cognitive Neurosciences : Perception, Spatial Cognition, Navigation
Computer Sciences : Computer Vision, Sensor Fusion, Wearable devices
Experimental Psychology : User studies, A/B testing, Statistical analysis

Student-Entrepreneur
PEPITE Rouen, France / Since September 2018

Entrepreneurship: Project management, KPI, Marketing, Business plan, Branding, Intellectual Property, Personas, Agile framework.

MSc - Cognitive Sciences
PHELMA - Grenoble INP Grenoble, France / From 2015 to 2016

Machine Learning: Deep Learning, Bayesian Modeling, Optimization
Neuroscience: Vision, Attention, Language, Memory & Learning models
Psychology: Developmental, Cognitive, Experimental & Behavioral studies

MSc - Social & Organisational Psychology
University of Strasbourg Strasbourg, France / From 2013 to 2015

Social & Organisational Psychology: Risk & Change management, Persuasive communication, Motivation, Work Ergonomics, Personality assessment
Human Resources: Recruitment, Skill assessment, Occupational health

Work experience

Junoir R&D Manager - Computer & Cognitive Sciences
LITIS (http://litislab.eu/) Rouen, France / Since November 2016

♦ Design, implementation, and evaluation of innovative audio-tactile wearable devices to assist Visually Impaired People (VIP) in different tasks:
① Autonomous navigation, indoor and outdoor (project ACCESSPACE)
② Virtual exploration to prepare a journey (project NAV-VIR)
③ Access to artworks and accessibility of museums (project TETMOST)
♦ Recruitment, management and overseeing of several graduate interns.
♦ Promoting results: articles, conferences and dissemination events.

Teaching Assistant - Computer Sciences
University of Rouen Rouen, France / Since October 2017

Web Development, Java and Python classes to undergrad students.

Research Internship - Computer Sciences
SKERI San Francisco / From November 2018 to February 2019

Development of an Indoor Localization solution based on ARKit's Visual Inertial Odometry, particle filtering and the Indoor Atlas framework.

Research Internship - Cognitive Sciences
LPNC Grenoble, France / From January 2016 to September 2016

Improvement of a bio-inspired audio-visual substitution device for VIP.

Research Internship - Social & Cognitive Psychology
LPC Strasbourg, France / 2014

Evaluating the impact of dyslexia on implicit self-judgment in children.

marc.aurele.riviere@gmail.com
Rouen, France
French
28 years old
(068) 474-7531
ma-riviere.com

Languages

French

English

Spanish

Interests

Cognitive Neurosciences

Science & Technology

Artificial Intelligence

Data Science

Innovation

Education

Award & Memberships

♦ Member of the **Young Researcher Consortium** (YRC) on Computers for Helping People (ICCHP)

♦ Member of the French Research Groups GdR TACT & GdR ISIS.

♦ CCAH "Applied research on disability" award (2017)

♦ International Computer Vision Summer School graduate (2017)

Transferable skills

R&D Project Management

Multidisciplinary tech watch: Neurosciences, Computer Vision, ML, DL.
Fundraising: Grant proposals: Europe (H2020), National (ANR), Regional (RIN).
Innovation & IP Management
Leadership & Entrepreneurship

Communication

Outreach: international conferences, scientific papers, dissemination, teaching & training, blogging, organization of science events.
International collaboration & networking

Technical skills

Experimental Research

Scientific method, Research design, Data collection & analysis.

Statistics

Hypothesis testing: p-values, Confidence Intervals, Bayes Factors.
Models: Univariate & multivariate analyses, Parametric (Student, ANOVA, ...) & Non-Parametric (MW, KW, ...), Bayesian Modeling.
Tools: Statistica, SPSS, R Studio, Dive

Web Development

Web Frameworks: NodeJS, Flask, React, Javalin, JAM-Stack
Environments: Android, iOS
Tools: Intellij, Jupyter, Git

Machine Learning & Deep Learning

Dimensionality Reduction: PCA, Factorial Analysis
Classification & Regression: SVM, Naive Bayes, Decision Tree, KNN
Clustering: GMM, K-Means, DBSCAN
Deep Learning: Convolutional Neural Networks

Image Processing & Computer Vision

Object Detection, Classification, Segmentation, Feature tracking & matching (ORB), Odometry (Visuo-Inertial)

Publications

Rivière, M.-A., Gay, S., Romeo, K., Pissaloux, E., Bujacz, M., & Strumillo, P. (In Press). NAV-VIR: an audio-tactile virtual environment to assist visually impaired people. In **9th International IEEE/EMBS Conference on Neural Engineering (NER)** (p. 4). San Francisco, California: IEEE.

Riviere, M.-A., Gay, S., & Pissaloux, E. (2018). TactiBelt: Integrating Spatial Cognition and Mobility Theories into the Design of a Novel Orientation and Mobility Assistive Device for the Blind. In K. Miesenberger & G. Kouroupetroglou (Eds.), **Computers Helping People with Special Needs** (Vol. 10897, pp. 110–113). Cham: Springer International Publishing.

Gay, S., Rivière, M.-A., & Pissaloux, E. (2018). Towards Haptic Surface Devices with Force Feedback for Visually Impaired People. In K. Miesenberger & G. Kouroupetroglou (Eds.), **Computers Helping People with Special Needs** (Vol. 10897, pp. 258–266). Cham: Springer International Publishing.

Assets

Curious

Assertive

Adaptable

Creative

Strategic

Programming skills

Java

JavaScript

Python

Swift

C++

Arduino

HTML, CSS

Links

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