

# 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 & Human-Machine Interfaces to improve their QoL, autonomy, and safety.

## Work experience

### Junior R&D Manager - Computer & Cognitive Sciences

**LITIS** (<http://litislab.eu/>) Rouen, France / 11-2016

◆ 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 (Augmented Reality)
- ② Environment exploration for journey preparation (Virtual Reality)
- ③ Access to artworks and Museums

◆ Recruitment, management, and oversight of several interns.

◆ Promoting results: articles, conferences, and dissemination events.



### Graduate Teaching Fellow - Computer Sciences

**University of Rouen** Rouen, France / 10-2017

Lectures & practical classes on Web Development, Python, Java, Image Processing & Computer Vision.



### Research Internship (Indoc) - Computer Sciences

**SKERI** San Francisco / 11-2018 - 02-2019

Study and 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 / 01-2016 - 09-2016

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.



## Education

### PhD - Cognitive Sciences

**University of Rouen-Normandy** Rouen, France / 11-2016

Cognitive Neurosciences : Psychophysics, Spatial Cognition, Navigation

Computer Sciences : Computer Vision, Localization, Wearable devices

Experimental Psychology : Ergonomics, Design of Experiments, Statistical analysis

### Student-Entrepreneur

**PEPITE** Rouen, France / 2018 - 2019

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



### MSc - Cognitive Sciences

**PHELMA - Grenoble INP** Grenoble, France / 2015 - 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 / 2013 - 2015

Social & Organisational Psychology: Risk & Change management, Persuasive communication, Motivation, Work Ergonomics, Personality assessment

Human Resources: Recruitment, Skill assessment, Occupational health



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📅 29 years old

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✈ International

## Languages

French

English

Spanish

## Interests

Cognitive Neurosciences

AI & Data Science

Science & Technology

## Award & Memberships

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

◆ Best presentation award at RUNN'19

◆ Member of the Young Researcher Consortium (YRC) of the ICCHP

◆ Member of the French Research Groups [GdR TACT](#) & [GdR ISIS](#).

## Assets

Curious

Assertive

Adaptable

Creative

## Transferable skills

### R&D Project Management

Multidisciplinary tech watch: Neurosciences, Cognitive Sciences, Applied Statistics, Computer Vision, Machine Learning & Deep Learning.

Grant writing: Europe (H2020), National (ANR), Regional (RIN).

Managing interns: write offers, screen candidates, and technical supervision.  
Innovation & IP Management

### Communication

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

International networking

## Technical skills

### Experimental Research

Experimental design, Psychophysics, Behavioral studies, Cognitive Modeling.

Tools: OpenSesame, PsychoPy, online surveys.

### Statistics & Data Science

Statistical Modeling: Multivariate, Linear, Non-linear, Generalized, Mixed-Effects / Multilevel; Parametric, Non-parametric; Probabilistic (Bayes Nets).

Hypothesis testing, Model comparison (AIC, BIC, BF,  $R^2$ , ...).

Tools: R Studio, R Markdown & Shiny, Jupyter, Colab, LaTeX, Statistica, Excel.

### Machine Learning & Deep Learning

Machine Learning: Dimensionality Reduction (PCA, LDA), Classification & Regression (SVM, Decision Tree, RF), Clustering (DBSCAN, K-Means); Probabilistic Models (Naive Bayes, Gaussian Processes, Bayes Nets); Latent Models (FA, VAE).

Deep Learning: Vision, NLP.

Tools: Scikit-learn, PyTorch, Pyro, Keras.

### Web/Mobile App Development

Front-End: Web (HTML & CSS; Hugo), Android, iOS, Cross-Platform (Flutter, Kivy).

Back-End: NodeJS, Flask; Websockets, gRPC.

Tools: JetBrains, Android Studio, Git, Hosting (Heroku), Deploy (Docker, Netlify).

### Computer Vision & Robotics

Image Processing, Object / Feature detection, Segmentation, Odometry, Localization, SLAM.

Tools: OpenCV, Scikit-image, ARCore, Arduino IDE.

## Publications

Riviere, M.-A., Gay, S., Romeo, K., Pissaloux, E., Bujacz, M., Skulimowski, P., & Strumillo, P. (2019). NAV-VIR: An audio-tactile virtual environment to assist visually impaired people. *2019 9th International IEEE/EMBS Conference on Neural Engineering (NER)*, 1038–1041.

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.

## Programming skills

### Python

### Java

### JavaScript

### Dart

### R

### Swift

### C++ / Arduino C

### SQL

## Conferences

IHAW 2020 (Rouen, France)

RUNN 2019 (Caen, France)

NER 2019 (San Francisco, USA)

CJCSC 2019 (Paris, France)

ICCHP 2018 (Linz, Austria)

HANDICAP 2018 (Paris, France)

## Events

- ◆ [ICVSS 2017](#) graduate
- ◆ [Probabilistic AI 2019](#) graduate
- ◆ Math-Industry week (SEME 2019)

## Outreach

[ Posters ] NER 19 (San Francisco, USA), Channel Research Day (Caen, FR), 3<sup>rd</sup> French-Polish Research & Innovation Forum (Warsaw, PL), RUNN 19 (Caen, FR)

[ Seminars ] CesamS (Caen, FR), U.B. (Dijon, FR), Politechnika Łódzka (Łódź, PL), SKERI (San Francisco, USA), French Norwegian PhD Day (Trondheim, NO)

[ Dissemination ] [Experimentarium](#), [PhD Talent](#), FENO 2020

## Links



[ma-riviere](#)



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