Marc-Aurèle RIVIÈRE

Research Software Engineer

R Programming | Data Science | Neuroscience
Building software and analyzing data for 7 years, with a focus on R & Shiny
Creating Web apps, APIs, packages, websites, and interactive dashboards

Work experience

R/Shiny Developer
Data Champ' Remote / 2024 - 2025
Designed, coded & deployed Shiny apps and APIs for a dozen different projects, including:
♦ A comprehensive HR management system for France's development agency (AFD) to track thousands of employees across multiple branches, featuring recruitment campaign management, predictive workforce analytics, and role-based approval workflows.
♦ An investment analytics platform for the AFD, to visualize and track their portfolio of billions in international development funding across thousands of projects in multiple developing countries, with cross-platform data integration, interactive geospatial visualizations, and automated impact reporting to support sustainable development decision-making.
♦ A modular package for a branch of the French government, to integrate multiple sources of heterogeneous geo-spatial data, process them into multiple spatio-temporal indicators computed at various levels of spatial granularity, and archive them in a specially-designed DB, to be displayed in a public interactive web app.
♦ An integrated construction site management system with tree-based cost estimation, multi-format document parsing using LLMs, bidirectional integration with the Odoo ERP, automated quote generation, and smart project scheduling.
♦ An enterprise-scale energy Measurement & Verification API for the Belgian Government, automating standard and IPMVP methods for energy consumption modeling, statistical analyses at multiple levels of granularity, multi-platform data integration, and estimating the impact of renovations on energy consumption with comprehensive report generation.

Consulting
Freelance Remote / 2023 - 2024
Sales/Marketing:
♦ Developed a sales automation tool featuring automated web/social media scraping for lead enrichment, agentic AI workflows for prospect discovery and personalized email generation, and multi-CRM API integration.
Bioinformatics:
♦ Conducted the statistical analyses for 4 published papers in Biology (imaging, IHC, qPCR, and behavioral data) using generalized multilevel models
♦ Automated pipelines to pull/enrich genetic data from entrez/NCBI
♦ Created a Shiny app to allow team members to import, visualize and analyze their data
♦ Built interactive dashboards to showcase results for select publications (R, Quarto, JS)

Research Engineer
LITIS Rouen, France / 2021 - 2023
♦ Designed & developed an Augmented Reality platform in with motion tracking and spatialized sound feedback, to evaluate and train non-visual navigation (Unity/C#)
♦ Designed a wearable vibrotactile belt for haptic-based navigation for blind people, and participated in the design of an interactive haptic tablet to display images (Java/Arduino)
♦ Designed psychophysics experiments to evaluate the impact of spatial cues on navigation
♦ Developed and tested camera-based solutions for indoor localization (Python/C++)
♦ Formulated & wrote a 600k€ research grant proposal (ANR project "SAM-Guide", 2021)
♦ Co-organized an international (IHAW'20) and a regional (JED'17) scientific conference

Graduate Teaching Fellow
University of Rouen Rouen, France / 2017 - 2020
Gave university lectures & practicals on Web Development, General programming in Python, GUI design with Java, Image Processing, and Machine/Deep Learning for Computer Vision

Research Engineer Intern
SKERI San Francisco, USA / 2018
Worked on an indoor localization solution using Visual Inertial Odometry, particle filtering, object detection, and real-time video streaming (Python/Flask, Swift, OpenCV)

Research Engineer Intern
LPNC & GIPSA-Lab Grenoble, France / 2016
♦ Developed an image-to-sound conversion app for blind shape exploration on a tablet (C++)
♦ Iteratively improved the app based on statistical analysis of users' performance

HR Analyst Intern
AFPA Strasbourg, France / 2015
♦ Developed a tool (Excel/VBA) to help gather & index job offers for vocational training clients
♦ Offered training sessions on how to optimize their job search and tailor their applications

✉ marc.aurele.riviere@gmail.com
⌂ Trondheim
📅 34 years old
🔗 https://ma-riviere.com

Languages

French - Native

English - Bilingual

Norwegian (Bokmål) - A2/B1

Spanish - A2

Programming Skills

R

Python

SQL

JS

Java / C#

Stan

Frameworks & Tools

Shiny

Scientific Publishing

Quarto, R Markdown

Git

DBMS

Postgres, DuckDB, SQLite

DevOps / Infra

Ansible, Terraform, Docker, CI/CD

Education

PhD - Biomedical Engineering & Cognitive Neuroscience (unfinished - COVID)
Normandy University Rouen, France / 2017 - 2020
♦ Design, develop and evaluate wearable vibro-tactile devices to assist visually impaired people with orientation & navigation tasks, both in the real work and in augmented reality
♦ Design and execute multiple psychophysics experiments with human subjects
♦ Implement algorithms for real-time localization and mapping using embedded/mobile sensors

MSc. - Computational & Cognitive Neurosciences
PHELMA - INPG Grenoble, France / 2015 - 2016
♦ Fundamentals of Memory, Perception, Linguistics, Robotics, Imaging (e.g. fMRI, EEG, MEG)
♦ Experimental design, Statistics, Bayesian modeling, Deep Learning, Signal processing
♦ Programming in MATLAB and R

Scientific Publications

Rodriguez-Duboc, A., Basille-Dugay, M., Debonne, A., **Rivière, M.-A.**, Vaudry, D., & Burel, D. (2023). Apnea of prematurity induces short and long-term development-related transcriptional changes in the murine cerebellum. *Current Research in Neurobiology*, *5*, 100113. https://doi.org/10.1016/j.crneur.2023.100113

Faugloire, E., Lejeune, L., **Rivière, M.-A.**, & Mantel, B. (2022). Spatiotemporal influences on the recognition of two-dimensional vibrotactile patterns on the abdomen. *Journal of Experimental Psychology: Applied*, *28*(3), 606–628. https://doi.org/10.1037/xap0000404

Coughlan, J.M., Biggs, B., **Rivière, M-A.**, Shen, H. (2020). An Audio-Based 3D Spatial Guidance AR System for Blind Users. In Miesenberger, K., Manduchi, R., Covarrubias Rodriguez, M., Peňáz, P. (Eds.), *Lecture Notes in Computer Science* (Vol. 12376, pp. 475–484). Springer Int. Publishing. https://doi.org/10.1007/978-3-030-58796-3_55

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. *Proceedings of the 9th International IEEE/EMBS Conference on Neural Engineering*, 1038–1041. https://doi.org/10.1109/NER.2019.8717086

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 Miesenberger, K., Kouroupetroglou, G. (Eds.), *Lecture Notes in Computer Science* (Vol. 10897, pp. 110–113). Springer Int. Publishing. https://doi.org/10.1007/978-3-319-94274-2_16

Gay, S., **Rivière, M-A.**, Pissaloux, E. (2018). Towards Haptic Surface Devices with Force Feedback for Visually Impaired People. In Miesenberger, K., Kouroupetroglou, G. (Eds.), *Lecture Notes in Computer Science* (Vol. 10897, pp. 258–266). Springer Int. Publishing. https://doi.org/10.1007/978-3-319-94274-2_36

Extracurricular

♦ Cognitive Modeling (CMAH'21)
♦ Data Science School (DS3'21)
♦ Neuromatch Academy (NMA'20)
♦ Probabilistic AI School (ProbAI'19)
♦ Computer Vision School (ICVSS'17)

Conference Talks

♦ RUNN 2019 (Caen, FR)
♦ CJCSC 2019 (Paris, FR)
♦ ICCHP 2018 (Linz, Austria)
♦ HANDICAP 2018 (Paris, FR)

Invited Talks

♦ Burgundy University (Dijon, FR)
♦ Politechnika Łódzka (Łódź, PL)
♦ SKERI (San Francisco, USA)
♦ French-Norwegian PhD Day (Trondheim, NO)

Conference Posters

♦ NER 2019 (San Francisco, USA)
♦ RUNN 2019 (Caen, FR)
♦ CRD 2019 (Caen, FR)
♦ French-Polish Research & Innovation forum 2017 (Warsaw, PO)