

VIRTUAL REALITY ENGINEER

DATA SCIENTIST

Delivering industry-leading advancements in digital documentation, Jean-François has successfully driven ground-breaking innovations within the virtual reality sector. His field and lab experience is both uncommon and wide-reaching. He is keen to state-of-the-art applicative research for capturing as well as sharing virtual realities. Jean-François works with passion. He is at once creative and rigorous, able to work autonomously and comfortable leading teams of people. He was awarded for his innovations in both cultural heritage and the nuclear industry. Recognized internationally as an expert in this field, his taste for pedagogy and communication has allowed him to convince users as well as decision makers that virtual reality can be a valuable tool for their trade.

EXPERIENCE

Research Engineer in Virtual Reality, 2013 to present

EDF (world's largest producer of electricity, EBITDA: €17.6 billion) – EDF Lab Paris-Saclay, FRA

- Led the design, experimentation and transfer of **advanced tools and methods for the production of very large virtual replicas** (reactor buildings) using laser scanning, panoramic imagery and as-built CAD modelling tools (Numerius).
 - ✓ From maintenance to decommissioning, **most engineering departments of EDF France are now using this standardized method.**
- Contributed to the development of a **virtual visit application** used for maintenance of nuclear reactors (VVProPrépa).
 - ✓ The application **is currently being deployed on all French Nuclear power plants.**
- Invented an **image processing algorithm to predict visibility of cave art** based on a single picture.
 - ✓ This **parietal contrast has been used for Chauvet cave** during a sponsorship project with Fondation EDF.
- Designed a **remote (web) and local 3D visualisation software** of large PDMS (Plant Design Management System) models of the thermal power stations and **managed the development** by a French company (VirtuelCity).
 - ✓ This app (Puma3D) **is used in two gas-fired power stations:** Bouchain and Blenod.
- Proved through reproducible experimentations the relevance of some ground-breaking technologies for industrial needs :
 - ✓ **graph spectral analysis** to improve productivity and quality of the registration of thousands of laser scans,
 - ✓ **topological model** of a complex building to allow spatial request and navigation simulations,
 - ✓ **deep learning algorithms** for equipment tag detection.

Industrial PhD in Mathematics and Engineering Sciences, 2009 to 2013

EDF & Université de Strasbourg – Clamart & Strasbourg, FRA

- Proposed and experimented a probabilistic algorithm that **overcame certain limitations in scanning survey dimensions** by increasing productivity of laser scan registration and referencing.
- Worked in **collaboration with engineers, mathematicians and field surveyors.**

Engineer Surveyor, 2009 (4 months)

ADOC Talent Management – Paris, FRA

- Wrote a **pedagogic** internal report for EDF about the fundamentals of geodetic surveys.

EDUCATION

PhD in Mathematics and Engineering Sciences, 2013

“Registration of 3D laser scans : a probabilistic approach”

Université de Strasbourg – Strasbourg, FRA

Master Semester, 2009

Computer vision, computer graphics, spatial analysis, aerial scanning

EPFL – Lausanne, CHE

Master in Surveying-Geomatics Engineering, 2009

Geometry, probabilities, field surveys, photogrammetry, image processing, positional astronomy

National Institute of Applied Sciences – Strasbourg, FRA

AWARDS

EDF Pulse Award, 2016

“Innovation supporting industrial performance”

Trophées R&D, 2015

“Client Value”

Best paper – Avila, ESP, 2015

3D'Arch, ISPRS

Best poster paper – Calgary, CAN, 2011

Laser Scanning Workshop, ISPRS

Student Award – Paris, FRA, 2009

Prix de l'Association Française de Topographie

TEACHING

Sessional lecturer in MS in Surveying Engineering, 2009 to present

Adjustment computations (3 yrs.)

Positional astronomy: gnomons & sundials (2 yrs.)

Computer vision (2 yr.)

R, LaTeX & Maxima (2 yrs.)

National Institute of Applied Science – Strasbourg, FRA

In-house teacher for engineering departments , 2014 to present

"Managing deliveries of scanning and as-built modelling"

EDF R&D ITECH – Saclay, FRA

INTERNSHIPS & SPONSORSHIPS

Cognitive simulation of cave art visibility applied to Chauvet cave, 2015-2016

Fondation EDF, EDF R&D, CNRS and French Ministry of Culture – Chauvet Cave, FRA

3D documentation using photogrammetry, 2009

French Archaeological Mission – Kilwa, SAU

Surveying and mapping, 2008

French Epigraphic Mission – Wadi Ramm, JOR

Surveying and bathymetry, 2007

Bodin Surveyors – Bourges, FRA

TOP 5 PUBLICATIONS

complete list on https://scholar.google.fr/citations?user=8n9e_e4aaaaj

2015 Hullo, JF., Thibault, G., Boucheny, C., Dory, F., and Mas, A. "Multi-Sensor As-Built Models of Complex Industrial Architectures." *Remote Sensing* 7, 12, 16339–16362.

2015 Hullo, JF., Thibault, G., and Boucheny, C. "Advances in multi-sensor scanning and visualization of complex plants: the utmost case of a reactor building" In *ISPRS Arch. Photogramm.* 2015, 1, 163–169. 3D'Arch in Avila, Spain. **Best paper award.**

2012 Hullo, JF., Grussenmeyer, P., Landes, T., and Thibault, G. "Probabilistic Feature Matching Applied to Primitive based Registration of TLS Data." In *ISPRS Annals* 2012. I-3, 221-226. Melbourne, Australia.

2011 Hullo, JF., Grussenmeyer, P., Landes, T., and Thibault, G. "Georeferencing of TLS data for industrial indoor complex scenes: beyond current solutions." In *Laser Scanning Forum, ISPRS Commission V.* Calgary, Canada. **Best poster paper award.**

2010 Hullo, JF., Grussenmeyer, P., Assali, P., and Smigiel, E. « Dense point cloud acquisition via stereo matching applied to: the Kilwa archaeological site and the Gallo-Roman theatre of Mandeure." In *11th VAST-EUROGRAPHICS International Symposium on Virtual Reality, Archaeology and Cultural Heritage.* Palais du Louvre, Paris, France.

TOOLS

complete list on request

Expert Photogrammetry (Photomodeler, Photoscan, VisualSFM), Laser Scanning (CloudCompare, Trimble Realworks, Cyclone), Design and photo editing (Adobe Creative Suite), Code prototyping and data analysis (R, Excel VBA), CAD and modelling (AutoCAD, Sketchup), Scanning hardware (laser scanners, cameras)

Skilled Automation and batch (Powershell, Python), Web and layout (Javascript, PHP, CSS), Geospatial analysis (qGIS, ESRI, Manifold), Object-oriented languages (C++ & OpenGL, C#), virtual reality devices (Oculus, ZSpace).

Language French (Native, excellent writing skills), English (professional speaking, fluent reading), Spanish (scholar), Old Greek

INVOLVEMENT & HOBBIES

Board of French Surveyors Association, 2014 to present

supervising the review committee of XYZ journal

newsletter editor

Sports clubs

water-polo

former rugby player

Culture

passionate of classic literatures (from antiques to 20th century)

choral singer (baroque and renaissance repertoire)

wildlife photographer

REFERENCES

Prof. Pierre GRUSSENMEYER

Head of MAP-PAGE laboratory

pierre.grussenmeyer@insa-strasbourg.fr

(+33) 388 471 313

National Institute of Applied Sciences, Strasbourg

Guillaume THIBAUT

Senior researcher in virtual reality

guillaume.thibault@edf.fr

(+33) 178 194 444

EDF Lab Paris-Saclay



Illustrations of some projects at <http://hullo.fr>