Baptiste Brument

Chercheur postdoctoral en vision par ordinateur
IRIT, CNRS

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Education

2021 – 2025 **Ph.D. in Computer Vision: Enhancement of Photographic 3D Reconstruction Techniques**, IRIT, University of Toulouse
Thesis Supervisor: Jean-Denis DUROU / Advisor: Lilian CALVET

2020 – 2021 **Master PSMSC - Performance in Software, Multimedia and Scientific Computing**, INP-ENSEEIHT, Toulouse

2018 – 2021 **Engineering School**, INP-ENSEEIHT, Toulouse
Digital Sciences - Image & Multimedia
Competence Areas: Computer Vision — Artificial Intelligence — Geometric and Photometric Methods for 3D Reconstruction

2016 – 2018 **Preparatory Classes for Grandes Écoles (PCSI-PSI)**, Lycée Joffre, Montpellier

2016 **Scientific Baccalaureate**, Lycée Notre-Dame de la Merci, Montpellier

Professional Experience

2025 – Present **Postdoctoral Researcher on the OPEN-DOPAMIn project (Open Dissemination of Photogrammetry via AliceVision/Meshroom for Industry), CNRS Innovation**, IRIT, CNRS

2021 – Present **Teaching Assistant DCCE**, INP-ENSEEIHT, Toulouse
Courses taught: Computer Architecture (BSc), Data Analysis (BSc), Probabilities (BSc), Statistics (BSc), Inverse Problems for 3D (MSc).
Created a lecture and two practical sessions on NeRF/NeuS and RNb-NeuS within the Inverse Problems for 3D course (MSc).

Mar – Sep 2021 **Research Internship**, REVA – IRIT, Toulouse
End of studies project – B. Brument, L. Calvet, J. Mélou, J-D. Durou. 3D Reconstruction of a Convex Polyhedron from its Silhouettes. ORASIS 2021

Jun – Jul 2020 **Research Internship**, Lab. of Biometry and Bioinformatics, Department of Agricultural and Environmental Biology, University of Tokyo, Japan
Deep-learning based imputation of missing data in historical rice breeding database

Jun – Jul 2019 **Research Internship**, INRA/CIRAD, Montpellier
Creation of the *openalea.rtfd.io* website containing documentation and interactive tutorials (ReadTheDocs & Jupyter) for the mathematical and computer modeling software OpenAlea

2018 **Private Tutor in Physics and Mathematics**, Montpellier

Publications

International Journals

- Y. Quéau, S. Tozza, **B. Brument**, N. Buskulic, J. Mélou, L. Calvet, J. Fadili, J.-D. Durou, "Multi-view Shape-from-shading: A Tour," *Commun. Appl. Math. Comput. (CAMC)*, 2026 (Accepted).

- R. Bruneau*, **B. Brument***, Y. Quéau, J. Mélou, F. B. Lauze, J.-D. Durou, L. Calvet, "Multi-view Surface Reconstruction Using Normal and Reflectance Cues," *Int. J. Comput. Vis. (IJCV)*, 2025. *Equal contribution.
- A. Laurent, B. Coupry, **B. Brument**, J. Mélou, Y. Quéau, C. Fritz, J.-D. Durou, "Combining geometric and photometric 3D reconstruction techniques for cultural heritage," *J. Cult. Herit.*, vol. 73, pp. 43-51, 2025.
- R. Bruneau, **B. Brument**, L. Calvet, M. Cassidy, J. Mélou, Y. Quéau, J.-D. Durou, F. B. Lauze, "Multi-view stereo of an object immersed in a refractive medium," *J. Electron. Imaging (JEI)*, 2024.

International Conferences

- E. Most, J. Hein, F. Giraud, N. Cavalcanti, L. Zingg, **B. Brument**, N. Louman, F. Carillo, P. Fürnstahl, L. Calvet, "Acquiring Submillimeter-Accurate Multi-Task Vision Datasets for Computer-Assisted Orthopedic Surgery," *Proc. IPCAI*, 2025.
- B. Coupry, **B. Brument**, A. Laurent, J. Mélou, Y. Quéau, J.-D. Durou, "Assessing the Quality of 3D Reconstruction in the Absence of Ground Truth: Application to a Multimodal Archaeological Dataset," *Proc. WACV*, 2025.
- **B. Brument***, R. Bruneau*, Y. Quéau, J. Mélou, F. B. Lauze, J.-D. Durou, L. Calvet, "RNb-NeuS: Reflectance and Normal-based Multi-View 3D Reconstruction," *Proc. CVPR*, 2024. *Equal contribution.
- L. Calvet, N. Maignan, **B. Brument**, S. Tozza, J.-D. Durou, Y. Quéau, "Multi-view Normal Estimation – Application to Slanted Plane-Sweeping," *Proc. SSVM*, LNCS vol. 14009, 2023.
- **B. Brument**, L. Calvet, R. Bruneau, J. Mélou, S. Gasparini, Y. Quéau, F. B. Lauze, J.-D. Durou, "A shape-from-silhouette method for 3D reconstruction of a convex polyhedron," *Proc. SPIE QCAV*, 2023.

National Conferences (France)

- B. Coupry, J. Mélou, A. Laurent, **B. Brument**, P. Gurdjos, Y. Quéau, J.-D. Durou, "Stéréophotométrie avec estimation locale de l'éclairage - Application à la reconstruction 3D du patrimoine archéologique," *Actes RFIAP*, 2024.
- **B. Brument**, L. Calvet, J. Mélou, J.-D. Durou, "Reconstruction 3D d'un polyèdre convexe à partir de ses silhouettes," *Actes ORASIS*, 2021.

* **Equal contribution**

Languages

French	**Native**
English	**Proficient (C1)**, Cambridge Linguaskill Business: 180+
Spanish	**Basic**
German	**Basic**

Computer Skills

OS	**Unix, Windows**
Languages	**Python, Matlab**
Libraries	**PyTorch**
Tools	**LaTeX, Git, Docker, SLURM, Claude Code, Jupyter**
Software	**Meshroom, Inkscape, Gimp**
HPC	**MesoNet Juliet cluster**