

Benoit L. Marteau

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LinkedIn | GitHub | Portfolio | Google Scholar

SUMMARY

PhD candidate at Georgia Tech, **ACL 2026 Findings co-led** on faithful multimodal reasoning, with 30+ publications (9 first/co-led), **IEEE Best Paper Award** for a real-time 3D digital twin system, and the **NSF-Google-EMBS Award (2025)**. Thesis on **Trustworthy Data and AI**: bridging multi-site data quality, evidence-grounded reasoning, agentic AI, and uncertainty-aware models. Native French speaker. Open to **research and applied scientist opportunities in AI/ML**.

EDUCATION

Georgia Institute of Technology

Atlanta, GA

Ph.D., Electrical and Computer Engineering (GPA 4.0)

2022 to Expected 2027

- Advisor: Dr. May D. Wang. Focus: trustworthy AI, multimodal foundation models, faithful reasoning, generative AI, 3D/XR
- IEEE ICIR 2022 **Best Paper Award** | NSF-Google-EMBS Award (2025) | NSF Travel Award (2024)
- IEEE BHI 2025 Young Professional Co-Chair | STAR-AI Symposium 2026 Organizing Committee

M.S., Electrical and Computer Engineering (Double Diploma with Arts et Métiers ParisTech)

2019

Arts et Métiers ParisTech

France

Diplôme d'Ingénieur (M.S. Engineering); Dassault UAV Challenge Team Lead (2017): 3rd place, first team to deploy onboard deep learning for autonomous navigation

2016 to 2020

RESEARCH EXPERIENCE

Graduate Research Assistant and Lab Manager

Jan 2022 to Present

Bio-MIBLab, Georgia Institute of Technology (Advisor: Dr. May D. Wang)

Atlanta, GA

- **Faithful Multimodal Reasoning, Tree-of-Evidence** (ACL 2026 Findings, co-led): inference-time beam search that extracts compact, auditable evidence sets for multimodal predictions. **Retains 98%+ of full-model AUROC with 5 evidence units; 56% lower fidelity error vs. greedy decoding, 58% lower vs. LIME**. A 109M model outperforms zero-shot LLMs up to 70B across 6 tasks, 3 datasets, 2 domains.
- **Trustworthy Data and Uncertainty-Aware AI** (IEEE BHI 2024, 2025 first author; IEEE Reviews in BME 2025; ongoing): multi-site data harmonization (OMOP/FHIR) and METRIC-extended quality assessment over **750M data points** on a Python pipeline replacing the OHDSI R/Java stack. Currently extending into **quality-aware uncertainty quantification and agentic AI for data improvement**, so deployed AI can flag and repair low-confidence outputs on poor-quality inputs.
- **3D Digital Twins, XR, and Real-Time Sensor Pipelines** (IEEE ICIR 2022 **Best Paper Award**, co-first; 2024, 2025 co-led): *IDTVR*: cloud digital twin streaming ESP32 sensors through Azure into a Unity environment with real-time ML inference; photogrammetry-based 1:1 environment reconstruction. *Brain-DTXR*: extended pipeline to multi-modal biomedical signals with eLORETA source localization. *EXR*: immersive 3D EHR visualization on Meta Quest 3. Generative speech-to-mesh pipeline for personalized 3D VR (ICIR 2025, co-author).
- **Generative Multimodal AI** (ACM BCB 2023 co-first; NeurIPS DGM4H Workshop 2023; ISBI 2025 co-first): benchmarked diffusion vs. GAN architectures for high-fidelity image synthesis (**cutting sFID 3.5x (337.7 to 97.6)**). Cross-modality U-Net translation of **58-channel immunofluorescence to virtual H&E**. Dataset cartography for multimodal training-dynamics analysis.
- **Lab Operations**: manage cloud and GPU compute infrastructure for 50-person research lab; mentor 12+ graduate and undergraduate researchers; co-organize STAR-AI Symposium on Safe, Trustworthy, Actionable, Responsible AI.

Software Engineer Intern

Mar to Jul 2020

Cisco Systems, Cyber Vision / IoT Security: RNN-based anomaly detection over multi-system industrial IoT signals.

Villeurbanne, France

TECHNICAL SKILLS

ML: PyTorch, TensorFlow, Hugging Face; LLMs and Multimodal Foundation Models; Vision Transformers, CNNs, GANs, Diffusion; Beam Search and Inference-Time Reasoning; Uncertainty Quantification. **3D / XR and Cloud**: Unity, Meta Quest SDK, photogrammetry, ESP32 sensor streaming; Azure, MS Fabric, Docker. **Languages**: Python, C#, SQL.