Quentin Leboutet, PhD | AI Research Scientist

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AI Research Scientist with 10 years of experience in academic and industrial R&D. Expertise in Artificial Intelligence, Deep Learning, Generative AI, Reinforcement Learning, Robotics, Control, Identification, Sensor Fusion and Prototyping.

Professional Experience

AI Research Scientist in Applied Graphics and Vision — *Mai 2025 – Present*
Intel Corporation — *Munich, Germany*

- **XeSS:** Architecture research for Intel's Super Sampling pipeline.
- **Kernel Generation:** SYCL kernel generation using coding agents.

AI Research Engineer / Scientist — *February 2022 – Mai 2025*
Intel Corporation — *Munich, Germany*

- **3D Foundation Models:** Benchmarked and refined diffusion models and representations for high-fidelity 3D assets generation. Results published in TMLR (2025) [1].
- **Articulated Assets Generation:** Spearheaded the development of MIDGArD, a generative framework for synthesis of 3D articulated assets. Results published in NeurIPS (2024) [2].
- **Simulation & Software Tools:**
  - SPEAR: Enhanced a photorealistic simulator for testing embodied AI algorithms [4].
  - Open3D: Integrated primitive shape fitting pipeline to Open3D.
  - OpenBot: Investigated sim2real transfer and policy training in the SPEAR simulator [5].

Graduate Research And Teaching Assistant — *July 2016 – October 2021*
Institute for Cognitive Systems – Technical University of Munich — *Munich, Germany*

- **Doctoral Research:** Conducting research on the topic "*Enhanced Robot Compliance, State Estimation and Identification using Distributed Tactile Feedback: Leveraging Redundancy and Multimodality*" [6],[7],[8],[9],[10],[11].
- **Teaching Activities:** Humanoid Robotics Systems (2017 – 2021), Humanoid Sensors and Actuators (2017 – 2021), Humanoid Robo-Cup (2018 – 2021), Multi-sensory based robot dynamic manipulation (2016 – 2018) along with multiple research seminars, research projects and "HiWi" (research student) supervision.
- **Mentorship:** Supervised 5 master thesis students from the Technical University of Munich, as well as research students from "ENS Paris-Scalay" (France), "ENS Ulm" (France) and "ENSEA" (France).

Engineering Consultant — *March 2016 – December 2016*
EyeLights SAS — *Toulouse, France*

- Designed the Printed Circuit Board (PCB) of the first Head-Up Display (HUD) prototype.

Student Research Assistant — *December 2015 – April 2016*
Institute for Cognitive Systems – Technical University of Munich — *Munich, Germany*

- **Robot Skin Sensor:**
  - CAD design of an artificial skin cover for a UR5 industrial robot.
  - Sensor prototype manufacturing using 3D printers.
  - Validation of the prototypes on real robots and realization of a set of endurance tests.
- **Teaching Activities:** Tutor in Multi-sensory based robot dynamic manipulation.

Engineer Intern — *June 2013 – July 2013*
FH Joanneum — *Kapfenberg, Austria*

- Designed, built and tested a persistence-of-vision screen with an embedded Linux.

Engineer Intern — *July 2012 – September 2012*
Wuhan University of Technology — *Wuhan City, China*

- Developed fuzzy logic controllers for a Stewart platform.

Education

Ph.D. in Electrical Engineering & Computer Science — *July 2016 – January 2022*
Technical University of Munich – TUM — *Munich, Germany*

M.Sc. in Electrical Engineering & Computer Science — *October 2013 – February 2016*
Technical University of Munich – TUM — *Munich, Germany*

M.Eng. in Mechatronics — *September 2011 – June 2013*
École Nationale Supérieure de l'Électronique et de ses Applications – ENSEA — *Cergy-Pontoise, France*

Skills

Programming:	**C/C++*****, **Python*****, **SYCL****, **MATLAB*****, **Bash****, **R***, **Swift***, **VHDL***
AI Frameworks:	**PyTorch*****, **TensorFlow****
CAD|ECAD:	**SolidWorks*****, **Fusion 360*****, **CATIA***, **Eagle CAD*****, **KiCad****
Content Creation:	**Blender****, **Unreal Engine****, **Unity***
Other Tools:	**ROS*****, **Slurm****, **Git****, **LaTeX*****, **Microsoft Office****
Domain Expertise:	Artificial Intelligence, Machine Learning, Deep Learning, Generative AI, Reinforcement Learning, Robot Control, State Estimation, Parameter Identification, PCB & CAD Design, CNC Machining, 3D Printing.
Languages:	**French***** (*mother tongue*), **English*****, **German****, **Spanish***.

Awards

- **Division Recognition Award** | Intel Corporation, 2024 | For contributions to the AEGIS project.
- **Division Recognition Award** | Intel Corporation, 2022 | For contributions to the SPEAR simulation platform.
- **Best Paper Award** | MDPI Applied Science, 2022 | For "*Inertial Parameter Identification in Robotics: A Survey*" [6].
- **Entrepreneurship Award** | ENSEA, 2013 | Best entrepreneurial project in the "Create, Convince, Grow" contest.

Community Service

Reviewer for the following scientific conferences:

- Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Computer Vision (ICCV)
- IEEE International Conference on Humanoid Robots (Humanoids)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE International Conference on Intelligent Robots and Systems (IROS)
- IEEE Conference on Decision and Control (CDC)

Reviewer for the following scientific Journals:

- IEEE Transactions on Robotics (TRO)
- IEEE Robotics and Automation Letters (RA-L)
- International Journal of Robotics Research (IJRR)

Selected Publications

[1] Wiedemann, N.*, Liu, S.*, **Leboutet, Q.***, Gao, K., Ummenhofer, B., Paulitsch, M., Yuan, K. "Unifi3D: A Study on 3D Representations for Generation and Reconstruction in a Common Framework". In: TMLR 2025.

[2] **Leboutet, Q.**, Wiedemann, N., Cai, Z., Paulitsch, M., Yuan, K. "MIDGArD: Modular Interpretable Diffusion over Graphs for Articulated Designs." NeurIPS 2024.

[3] Schoch, P., Yang, F., Ma, Y., Leutenegger, S., Hutter, M., **Leboutet, Q.** "IN-Sight: Interactive Navigation through Sight." IROS 2024.

[4] Roberts, M., **Leboutet, Q.**, et al. "SPEAR: A Photorealistic Simulator for Embodied AI." (Resubmission pending).

[5] Müller, M., Brahmbhatt, S., Deka, A., **Leboutet, Q.**, Hafner, D., Koltun, V. "OpenBot-Fleet: A System for Collective Learning with Real Robots." ICRA 2024.

[6] **Leboutet, Q.**, Roux, J., Janot, A., Guadarrama-Olvera, J.R., Cheng, G. "Inertial Parameter Identification in Robotics: A Survey" MDPI Applied Science 11.9 (2021). **Best Paper Award**.

[7] **Leboutet, Q.**, Bergner, F., Cheng, G. "Online Configuration Selection for Redundant Arrays of Inertial Sensors: Application to Robotic Systems Covered with a Multimodal Artificial Skin." IROS 2020.

[8] **Leboutet, Q.**, Guadarrama-Olvera, J.R., Bergner, F., Cheng, G. "Second-order Kinematics for Floating-base Robots using the Redundant Acceleration Feedback of an Artificial Sensory Skin." ICRA 2020.

[9] Cheng, G., Dean-Leon, E., Bergner, F., Guadarrama-Olvera, J.R., **Leboutet, Q.**, Mittendorfer, P. "A comprehensive realisation of Robot Skin: Sensors, Sensing, Control and Applications." Proceedings of the IEEE, 2019.

[10] **Leboutet, Q.**, Dean-Leon, E., Bergner, F., Cheng, G. "Tactile-based whole-body compliance with force propagation for mobile manipulators." IEEE Transactions on Robotics, 2019.

[11] **Leboutet, Q.**, Dean-Leon, E., Cheng, G. "Tactile-based compliance with hierarchical force propagation for omnidirectional mobile manipulators." IEEE-RAS Humanoids, 2016.