

EDUCATION

- Swiss Federal Institute of Technology Lausanne (EPFL)** Sep '19 to Jan '25
Ph.D in Computer Science – Major in Artificial Intelligence (GPA: 5.4/6.0)
Lausanne, CH
- Relevant courses: Learning Theory, Optimization for Machine Learning, Information Theory, Distributed Information Systems
- University of California Berkeley** Aug '17 to Dec '18
Master of Science in Mechanical Engineering – Major in Fluids (GPA: 4.0/4.0)
Berkeley, CA
- Relevant courses: Machine Learning, Optimization Methods, Tensor Calculus, Differential Geometry, Advanced Fluid Mechanics, Ocean Engineering
- Institut Supérieur de l'Aéronautique et de l'Espace, Supaéro (ISAE Supaéro)** Aug '15 to Sep '19
Equiv. Bachelor of Science and Master of Science in Aeronautical and Aerospace Engineering ("Ingénieur ISAE Supaéro", GPA: 4.0/4.0)
Toulouse, FR
- Relevant courses: Advanced Probability and Statistics, Computer Science, Continuum Mechanics, Fluid Mechanics

RESEARCH EXPERIENCE

- Google Research (Arkadia)** Jun '22 to Sep '22
Research Intern (qbecker@) – Host: Dr. Urs Bergmann (ursbergmann@)
Berlin, DE
- Developed a differentiable geometric primitives composition module (JAX)
 - Programmed deep vision models (JAX, TF1, and TF2) that learn to decompose an occupancy mask into primitives
 - Implemented optimal transport-based losses to train models to simplify building footprints into primitives (JAX)
- EPFL** Sep '19 to current
Ph.D Candidate – Advisor: Prof. Dr. Mark Pauly
Lausanne, CH
- Introduced and implemented a rationalization algorithm for bending-active structures that optimizes a single kit of parts to approximate many user-defined designs
 - Implemented an inverse design pipeline for deployable assemblies of curved elastic beams (C++ with Python bindings)
 - Developed a forward design tool based on conformal map for C-shells (Rhino-Grasshopper plugin)
 - Designed generative models to solve constrained physics-based inverse problems
 - Developed differentiable physics simulation frameworks: billiard game with diverse obstacles (PyTorch), constrained elastic deformations of 3D volumetric objects (C++, PyTorch, and JAX)
- Dassault Systèmes** Jan '19 to Jul '19
Research Intern in Machine Learning
Paris, FR
- Developed a clustering algorithm based on hash tables to find geometrically similar 3D parts within a dataset
- UC Berkeley** Sep '17 to Dec '18
Graduate Student – Advisor: Prof. Dr. Reza Alam
Berkeley, CA
- Developed an ad hoc genetic algorithm coupled with a boundary element method to optimize underwater vehicles
 - Trained a deep neural network to morph an underwater vehicle's shape according to its environment
- ISAE Supaéro** Jan '17 to Jul '17
Undergraduate Student – Advisor: Prof. Dr. Laurent Joly
Toulouse, FR
- Coded the method of characteristics for supersonic flows to design nozzles (then validated with CFD)

PUBLICATIONS

- Quentin Becker***, Uday Kusupati*, Seiichi Suzuki, Mark Pauly (*joint first authors). Computational Design of a Kit of Parts for Bending-Active Structures. *ACM Transactions on Graphics (Proc. of SIGGRAPH Asia 2024)*, 43.6, article 230 (December 2024): 1-16.
- Quentin Becker**, Seiichi Suzuki, Mark Pauly. Interactive Design of C-shells Using Reduced Parametric Families. *Journal of the International Association for Shell and Spatial Structures*, Vol. 65 (2024) No. 2 June n. 220.
- Quentin Becker**, Seiichi Suzuki, Yingying Ren, Davide Pellis, Julian Panetta, Mark Pauly. C-shells: Deployable Gridshells with Curved Beams. *ACM Transactions on Graphics (Proc. of SIGGRAPH Asia 2024)*, 42.6, article 181 (December 2023): 1-17 (**Best Paper Award Honorable Mention**)
- Michelis, Mike Yan, and **Quentin Becker**. On Linear Interpolation in the Latent Space of Deep Generative Models. *ICLR 2021 Workshop on Geometrical and Topological Representation Learning*. 2021. (**Spotlight**)
- Quentin Becker**, Mohammad-Reza Alam, and Alexandre Immas. Hydrodynamic Design of a Morphic Autonomous Underwater Vehicle Using Neural Networks. *ASME 2019 38th International Conference on Ocean, Offshore and Arctic Engineering*. American Society of Mechanical Engineers Digital Collection. 2019.

TEACHING EXPERIENCE

EPFL

Teaching Assistant for CS-457 Geometric Computing

Lausanne, CH

Fall 2021, 2023

- Developed recitations, created theory and coding homeworks (FEM, autodiff, adjoint sensitivity analysis)

Co-Head Teaching Assistant for CS-341 Introduction to Computer Graphics

Spring 2019, 2020

- Created coding homeworks (raytracing on the GPU), developed and led recitations, supervised coding projects

Teaching Assistant for Math-101 Analysis I and II

Fall 2020, Spring 2021

Teaching Assistant for CS-107 Introduction to Programming

Fall 2022, 2024

UC Berkeley

Graduate Student Instructor (50%) for Physics-8A Introductory Physics

Berkeley, CA

Fall, Spring 2017

MENTORSHIP

Semester Projects

- Mathilde Simoni (MS student, EPFL); Topic: Neural Subspaces for Symplectic Physical Trajectories Spring 2024
- Danila Zubko (MS student, EPFL); Topic: Latent Space Physical Simulations Fall 2023
- Vishal Pani (MS student, EPFL); Topic: Generative Model Evaluation Metric Using Differential Geometry Spring 2022
- Cosme Jordan (MS student, EPFL); Topic: Generative Inverse Design of Kirigami Sheets Fall 2021
- Amine Chaouchi (MS student, EPFL); Topic: Unsupervised Disentanglement of Caricatures Generation Spring 2020
- Mike Jan Michelis (MS student, TUM); Topic: Interpolations in a Generative Model's Latent Space Fall 2020
- Nathan Greslin (MS student, EPFL); Topic: Body Capture from a Single Image Fall 2020

Summer Interns

- Janet Qian (BS student, MIT); Topic: Topological Inverse Design of Elastic Springs Summer 2024
- Jae Yoon (David) Cha (BS student, University of Waterloo); Topic: Elastic Single Axis Joints Simulation Summer 2023
- Han Ying (BS student, CMU); Topic: Interactive Surface Parameterization Summer 2021

AWARDS/HONORS

- **Merit Scholarship**, Fondation ISAE SUPAERO May '17
- **Membership**, Golden Key (GKIHS) Feb '18

IT SKILLS

Programming: Python (JAX, PyTorch, TF), C++, WebGL, Matlab
Others: \LaTeX , Git, Google Internal Coding Infrastructure, Rhino-Grasshopper, Catia, StarCCM+, Fluent

VOLUNTEER EXPERIENCE

- **SUPAERO Junior Conseil – the Junior Enterprise of ISAE SUPAERO**, Head of the event division
- **SUPAERO Fencing Club**, President of the association
- **SUPAERO Student Association**, Section treasurer
- **Ose L'ISAE**, Volunteer in the social outreach section of ISAE SUPAERO

NON-RESEARCH WORK EXPERIENCE

Airbus Saint Eloi

Intern (laser measurements on engine pylons)

Jun '16 to Jul '16

Toulouse, FR