



Sebastian Baum

PhD Candidate

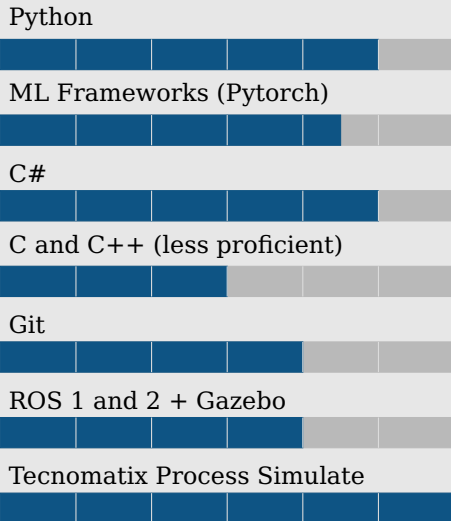
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About me

If I had to describe myself in one word, it would be "enthusiastic". I am deeply passionate about scientific research and have dedicated my career to pursuing it, even when it meant taking risks and turning down more secure job opportunities. I have never regretted these decisions, as they have allowed me to pursue my scientific interests. My fascination with robotics, optimization and AI has been a constant theme, and I am excited by the endless opportunities that arise from the intersection of these two fields.

Skills



[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Education

- 2019-2022 **M. Sc. Autonomous Systems (ToR, Certificate)**
University of Stuttgart
Focus in robotics and AI (German Grade 1.5 | GPA 3.5/4.0).
 - Master thesis: "Targeted generation of necessary training data by generative neural networks." ([Abstract](#), [Code](#)).
 - Two practical projects:
 - Sensor fusion (combining of stereo and color camera) ([Report \[GER\]](#)).
 - Paper Elaboration : A theoretical evaluation of a paper in the „Explainable AI“-area ([Report \[GER\]](#)).
- 2016-2019 **B. Eng. Electrical Engineering (ToR, Certificate (GER))**
Baden-Wuerttemberg Cooperative State University (DHBW) Stuttgart
Focus on automation and data science. My Bachelor's thesis involved the development of an automated system for generating electrical circuit plans based on sales offers.

Experience

- 2022-today **PhD Candidate**
University of Stuttgart - Institute of Industrial Automation and Software Engineering (IAS)
I am currently exploring physics-based AI and generative models for robotics applications. Due to my interest in optimization and robotics, my research is guided towards mathematics and I am eager to learn new mathematical concepts.
- 2019-2022 **Robotic development (Job reference [GER])**
Working Student at Festo SE & Co. KG
As a member of the "Application & Simulation" team, I specialized in simulation-based robotic tasks optimization for industry pilot projects in challenging environments.
- 2016-2019 **Hardware engineering (Job reference [GER])**
Dual Student at Siemens AG
I gained experience in professional programming, automated data processing and data science.

Scientific Research

My research interests revolve around the fields of robotics, optimization, and artificial intelligence, with a particular focus on exploring their interdisciplinarity. Currently, I am investigating the potential of physics-based AI and generative models.

Languages German (native), English (C1), French (basics)

Social Engagement

- Treffpunkt Adler - 71254 Ditzingen:** I help elderly comprehend the internet while supporting their understanding of new digital concepts.
- Arbeiterkinder e.V. - 70173 Stuttgart:** I provide encouragement, support and mentoring to students without academic parents.

Interests

My interests include cooking, making music, and hiking. I have a passion for testing and implementing new robotics and artificial intelligence algorithms on ROS. Additionally, I am an active member of an academic fraternity in Stuttgart, where I organize events and participate in various projects.

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