

# Claas Beger

📍 Santa Fe, New Mexico    ✉️ [claasbeger@gmail.com](mailto:claasbeger@gmail.com)    ☎️ (607)-697-5035    🌐 Website    in Claas Beger  
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## Education

<b>Cornell University</b> <i>MEng in Computer Science</i>	<i>Aug 2024 – May 2025</i> <i>GPA: 4.21/4.3</i>
<b>Hong Kong University of Science and Technology</b> <i>Exchange - Computer Science</i>	<i>Jan 2022 – May 2022</i> <i>GPA: 4.1/4.3</i>
<b>Technical University of Munich</b> <i>BS in Information Systems</i>	<i>Oct 2019 – Mar 2024</i> <i>GPA: 3.7/4.0</i>

## Experience

<b>Post-baccalaureate Research Fellow</b> <i>Santa Fe Institute</i>	<i>Santa Fe, New Mexico</i> <i>June 2025 – Present</i>
<ul style="list-style-type: none"><li>Conducting research on multimodal abstract reasoning in large AI models under the supervision of Professor Melanie Mitchell.</li><li>Designing and implementing evaluation benchmarks and analysis pipelines on scientific reasoning in collaboration with Sandia National Laboratories.</li></ul>	
<b>Graduate Teaching and Research Specialist</b> <i>Cornell University</i>	<i>Ithaca, New York</i> <i>Jan 2025 – May 2025</i>
<ul style="list-style-type: none"><li>Co-designed and revised homework, projects, and exams for <i>Introduction to Machine Learning</i>.</li><li>Graded assignments and provided detailed feedback on students' implementations and written analyses.</li><li>Held office hours and Q&amp;A sessions to clarify core ML concepts and support students with course logistics.</li></ul>	
<b>Responsible AI Engineering Intern</b> <i>PwC</i>	<i>Munich, Bavaria</i> <i>June 2022 – Jan 2023</i>
<ul style="list-style-type: none"><li>Integrated SHAP and LIME into a unified explainable AI engine supporting TensorFlow, PyTorch, and scikit-learn models.</li><li>Built internal tooling to standardize explanation workflows and visualize feature attributions.</li><li>Co-authored and presented a project white paper at the Bitkom Big Data &amp; AI Summit Berlin 2022.</li></ul>	
<b>Financial Technologies SWE Intern</b> <i>Deutsche Bank</i>	<i>Frankfurt, Hesse</i> <i>Oct 2021 – Jan 2022</i>
<ul style="list-style-type: none"><li>Developed and maintained microservices in Python and Java (Spring Boot) deployed on Red Hat OpenShift (Fabric).</li><li>Implemented database migration and analysis workflows using Flywaydb, JDBC, JPA, and PostgreSQL.</li><li>Collaborated with engineering and quantitative teams to integrate services into existing trading and risk management systems.</li></ul>	
<b>Research Assistant</b> <i>Institute of Computational Biology Munich</i>	<i>Munich, Bavaria</i> <i>Sep 2020 – Jun 2021</i>
<ul style="list-style-type: none"><li>Built deep neural networks for classification and clustering of over 20 million single-cell samples using TensorFlow, Keras, and Pandas.</li><li>Developed autoencoder architectures for generating synthetic diabetic cell samples to augment sparse datasets.</li><li>Cleaned, normalized, and visualized high-dimensional biological data in collaboration with computational biologists.</li></ul>	

## Technologies

**Technologies:** Python, C++, Java, Swift, SQL, PyTorch, TensorFlow, Numpy, sklearn, Pandas, SpringBoot  
**Skills:** Machine Learning, NLP, Computer Vision, Software Engineering, Neuromorphic Algorithms

## Selected Publications

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### Publications

**Investigating Abstraction Capabilities of the o3 Model Using Textual and Visual Modalities.** *Claas Beger*, Shuhao Fu, Ryan Yi, Arseny Moskvichev, Melanie Mitchell. NeurIPS 2025 Workshop on Multimodal Algorithmic Reasoning, Nov 2025. [Paper](#) [🔗](#)

#### Spotlight Presentation

**Refining Inverse Constitutional AI for Dataset Validation Under the EU AI Act.** Carl-Leander Henneking\*, *Claas Beger*\*. Regulatable ML Workshop at NeurIPS, Nov 2025. [Paper](#) [🔗](#)

**A Neuroscience-Inspired Dual-Process Model of Compositional Generalization.** Alex Noviello\*, *Claas Beger*\*, Jacob Groner, Kevin Ellis, Weinan Sun. NeurIPS 2025 Workshop on Interpreting Cognition in Deep Learning Models, Jul 2025. [arXiv](#) [🔗](#)

**Towards AI Collaborators: Exploring Goal, Value, and Role-Based Alignment in AI.** *Claas Beger*. 51st Annual Meeting of the Society for Philosophy and Psychology (SPP), Jun 2025.

#### Travel Award

**CoCoNUT: Structural Code Understanding Does Not Fall Out of a Tree.** *Claas Beger*, Saikat Dutta. LLM4Code Workshop at ICSE 2025, Jan 2025. [Paper](#) [🔗](#)

### Preprints

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**Citegeist: Automated Generation of Related Work Analysis on the arXiv Corpus.** *Claas Beger*, Carl-Leander Henneking\*. Preprint, under review, Jun 2025. [arXiv](#) [🔗](#)

#### Statistics and Data Science Faculty Award

**Memento: Note-Taking for Your Future Self.** Chao Wan, Albert Gong, Mihir Mishra, Carl-Leander Henneking, *Claas Beger*, Kilian Q. Weinberger. Preprint, under review, Jun 2025. [arXiv](#) [🔗](#)

**Do AI Models Perform Human-Like Abstract Reasoning Across Modalities?** *Claas Beger*, Ryan Yi, Shuhao Fu, ..., Melanie Mitchell. Preprint, under review, Feb 2025. [arXiv](#) [🔗](#)

### Forthcoming Work

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**Illusions of Abstraction in Contemporary AI.** Melanie Mitchell, Jacob G. Foster, *Claas Beger*, Ryan Yi, Shuhao Fu, Alessandro Palmarini. Under review; forthcoming.

**Bongards at the Boundary of Perception and Reasoning: Programs or Language?** Cassidy Langenfeld, *Claas Beger*, Gloria Geng, Wasu Top Piriyaikulij, Keya Hu, Yewen Pu, Kevin Ellis. Under review; forthcoming.

**OmniCode: A Benchmark for Evaluating Software Development Agents.** Atharv Sonwane, *Claas Beger*, ... Kevin Ellis, Saikat Dutta. Under review; forthcoming.

\* indicates equal contribution