

# Jake Brawer, Ph.D.

[website](#) / [github](#) / [email](#) / [linkedin](#)

## RESEARCH OVERVIEW

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**Summary** I build **interactive AI systems** that combine perception, reasoning, memory, and learning to support robust human-centered interaction. My work spans **robotics**, **conversational AI**, and **production ML systems**, with emphasis on realtime decision-making, structured knowledge, personalization, and deployable architectures.

## PROFESSIONAL EXPERIENCE

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<b>Founding Engineer</b>	<i>Stealth startup (voice AI / digital health)</i> Sole architect and founding engineer for an early-stage phone-based conversational AI platform for older adults. Built the end-to-end system across telephony, realtime speech, LLM orchestration, long-term memory, FastAPI services, PostgreSQL, and AWS infrastructure. Implemented platform safeguards for reliability and HIPAA-oriented handling of sensitive user data.	Nov 2025–Current
<b>Postdoc</b>	<i>University of Colorado, Boulder</i> Advisors: Alessandro Roncone and Bradley Hayes Lead research on human–robot teaming, assistive robotics, and AI decision support. Develop models for inferring human proficiency, trust, and intent from gaze and behavior in collaborative environments. Build semantic robot perception systems for robust localization in cluttered indoor workspaces using low-cost visual-inertial sensing.	2023–2025
<b>Lecturer</b>	<i>University of Colorado, Boulder</i> Sole lecturer for Advanced Robotics (CSCI 4302/5302), a graduate-level course covering motion planning, SLAM, optimization, and reinforcement learning.	Spring 2024

## EDUCATION

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<b>Yale</b>	<b>Ph.D. in Computer Science</b> Advisor: Brian Scassellati	2016–2023
<b>Vassar</b>	<b>B.A. in Cognitive Science; Computer Science minor</b>	2012–2016

## SKILLS

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<b>Languages</b>	Python, C/C++, C#, SQL, Git, Emacs, Docker, Linux, L <sup>A</sup> T <sub>E</sub> X
<b>AI / ML</b>	PyTorch, scikit-learn, SciPy, NumPy, Pandas, LangChain, LLM orchestration, RAG / vector retrieval, PGVector, matplotlib, NLTK, Gurobi, Prolog, PDDL

<b>Backend</b>	FastAPI, PostgreSQL, AWS, async Python, REST APIs, system design, deployment, load testing, observability, HIPAA-oriented system design, PHI-safe logging
<b>Voice AI</b>	Pipecat, Deepgram, AWS Bedrock, Tellynx, Cartesia
<b>Robotics/CV</b>	ROS, Gazebo, RViz, OpenCV, Open3D, Baxter, Sawyer, UR5, Kinect, RealSense, RGB-D cameras
<b>Soft Skills</b>	Clear technical communication, Collaborative, Fast learner, Leadership

## SELECTED PUBLICATIONS

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- Shivendra Agrawal, **Jake Brawer**, Ashutosh Naik, Alessandro Roncone, and Bradley Hayes (2026). “**ShelfAware: Real-Time Visual-Inertial Semantic Localization in Quasi-Static Environments with Low-Cost Sensors**”. In: *IEEE Robotics and Automation Letters*. Accepted.
- Nikhil Hulle, Stéphane Aroca-Ouellette, Anthony J Ries, **Jake Brawer**, Katharina von der Wense, and Alessandro Roncone (2024). “**Eyes on the Game: Deciphering Implicit Human Signals to Infer Human Proficiency, Trust, and Intent**”. In: *33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN 2024)*. Accepted for publication, proceedings pending.
- Jake Brawer**, Debasmita Ghose, Kate Candon, Meiyang Qin, Alessandro Roncone, Marynel Vazquez, and Brian Scassellati (2023). “**Interactive Policy Shaping for Human-Robot Collaboration with Transparent Matrix Overlays**”. In: *Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*. IEEE.
- Jake Brawer**, Meiyang Qin, and Brian Scassellati (2020). “**A causal approach to tool affordance learning**”. In: *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, pp. 8394–8399.

## AWARDS AND SERVICE

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| <b>2025</b>      | <b>Outstanding Reviewer Award</b> , Robotics: Science and Systems ( <b>RSS</b> )   |
| <b>2023-2025</b> | <b>Army Educational Outreach Program (AEOP) Fellowship</b> , University of Colorado Boulder  |
| <b>2024</b>      | Area Chair, International Conference on Human–Agent Interaction ( <b>HAI</b> )   |
| <b>2023</b>      | <b>Best paper (technical track)</b> , ACM/IEEE International Conference on Human-Robot Interaction ( <b>HRI</b> ) for “Interactive Policy Shaping for Human-Robot Collaboration”   |
| <b>Workshops</b> | Co-organized the Human-Machine Teaming Paradigm Workshop (2023) and Bridging the Gap: An NSF Workshop on Conversational Agents and Human-Robot Interaction (2018).   |
| <b>Service</b>   | Reviewer for <b>RSS</b> , <b>HRI</b> , <b>IROS</b> , <b>ICRA</b> , <b>Humanoids</b> , <b>IJRR</b> , <b>T-RO</b> , and <b>THRI</b> ; mentored undergraduate and graduate researchers on robotics, HRI, and assistive AI projects. |