Rebecca Ramnauth
Building Intelligent Robots for Social Therapy

Yale

I build theories about how people think, learn, and interact with the world around them.
Then, I apply these theories to develop robot-led interventions that support positive social outcomes among users of various cognitive and technical abilities.
My research features socially intelligent robots that can operate fully autonomously with vulnerable users in personal, real-world spaces over extended periods.

To combat social isolation during the COVID-19 lockdown for young children [HRI'21 🏅]

Month-long, in-home therapy to support gaze and social skills in children with autism [HRI'25 🏅]

Week-long, in-home training for adults with autism to practice job-related skills [RSS'25, HRI'22 🏅]

Month-long deployment in NYC public schools to support behavioral de-escalation [RO-MAN'25 🏅]

Research Dimension	Current Norm *past two decades*	What is Needed **but Challenging**
Location	Controlled laboratory or clinic	Real-world, naturalistic spaces
Duration	Single session, ≤ 1 hour	Longitudinal, days to months
Interaction Type	1:1, isolated	Multi-user, embedded in context
User Population	Neurotypical adult, "high-functioning"	Neurodiverse, full spectrum
Robot Operation	Scripted, supervised, non-autonomous, one-size-fits-all	Adaptable, unsupervised, fully autonomous, personalized
Study Purpose	Feasibility, proof-of-concept	Efficacy, generalizability

Contributions of This Work

First contactless home deployments during a global pandemic

First framework to evaluate when offering help is appropriate

First system to assess social presence and when to engage users

First system to support behavioral de-escalation in a public setting

First study to encompass broader functional diversity among users

First in-home, robot therapies for adults with autism

First robot that delivers multi-user, personalized therapy agnostic to age and diagnostic profiles

First use of foundation models for highly adaptable, unscripted, improvised robot therapies

First study to demonstrate continuous learning progression linked to clinical measures of therapeutic efficacy

284 families
with users ranging from 4 to 104 years old

12,984 hours
of fully autonomous robot uptime in real-world spaces

3,084 sessions
of personalized therapy and training interventions

950 hours
of active therapeutic engagement

84 TB
of multimodal data

Future Work and Lab Vision

To bridge technical innovation with human-centered design, training the next generation of researchers to approach robotics with both computational rigor and social responsibility. We will develop intelligent robots that operate safely and autonomously to foster positive social outcomes that extend into everyday human–human relationships.
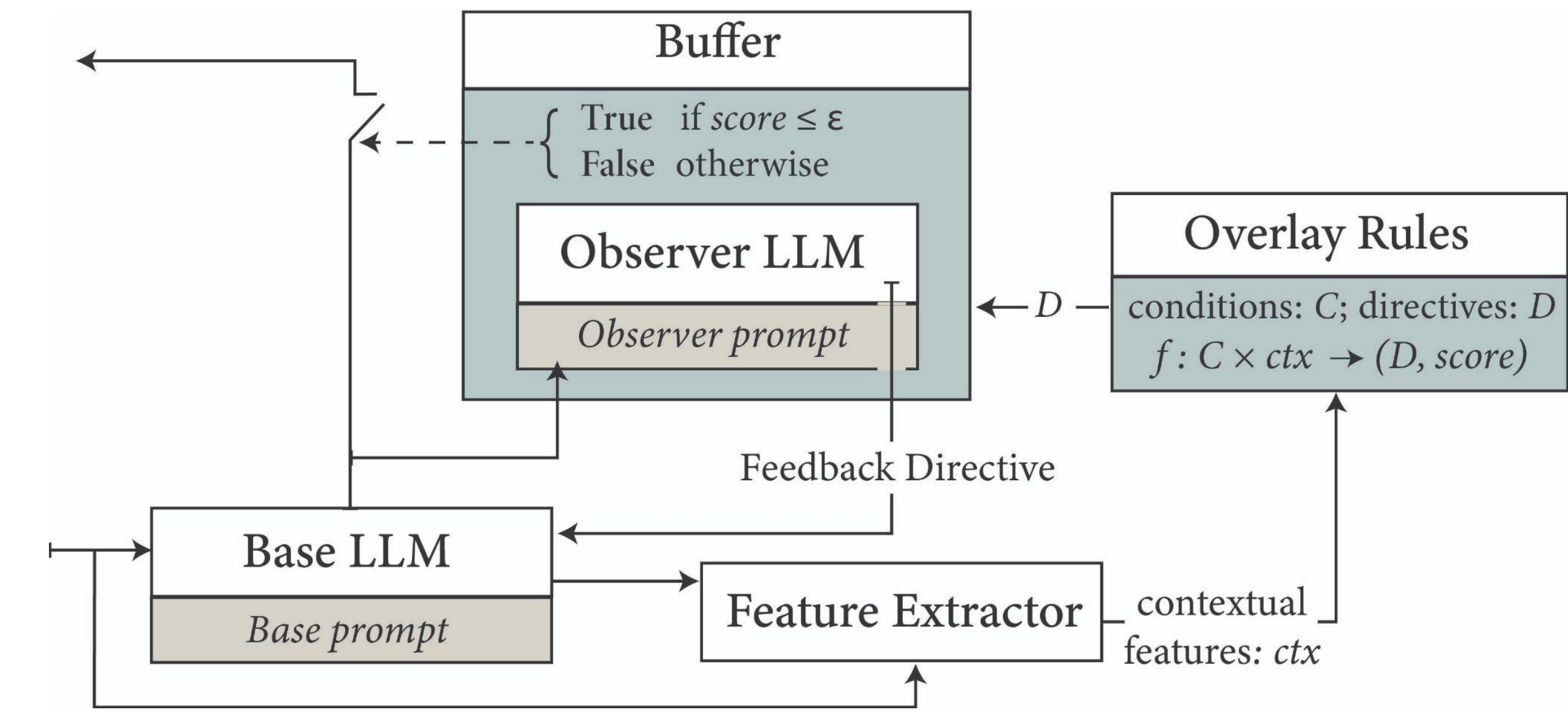
Developing robust guardrails for foundation-model-driven autonomy that enable ethical robot deployment in socially sensitive domains

Creating robots for novel users, spaces, and skills—many remain understudied and under-supported yet hold strong potential to reveal new facets of human cognition and inspire new systemic and methodological paradigms.

Rethinking robot intelligence by identifying and challenging the field's tacit rules about what robots are and how they should behave. Defying such norms can produce interactions that are more ethical, effective, and socially intelligent.