

# Standardized Patient Avatar for Reflective Communication Practice

Enhancing Clinician Communication Through Reflective AI Practice

## CHALLENGE

Clinicians regularly navigate complex, emotional conversations. However, opportunities to practice these skills are limited. Traditional training with live standardized patients is effective but resource-intensive, requiring significant time, cost, and coordination.

**SPARC (Standardized Patient Avatar for Reflective Communication Practice)** offers a new path forward: a virtual, AI-powered patient that enables clinicians to practice anytime, anywhere, with instant objective feedback that supports ongoing skill development.

### Communication Framework: The C-LEAR Model

The C-LEAR model provides a structured approach to effective communication about the HPV vaccine. SPARC-P uses this framework to evaluate clinician–caregiver dialogue and deliver targeted, real-time feedback that strengthens communication skills.



#### Counsel

*"We have a vaccine for 11-year-olds that prevents against six types of cancer. I recommend he/she gets this safe vaccine today, and then comes back in 6 to 12 months to get the second dose."*



#### Listen

*Allow time for the parent to state their concerns or questions*



#### Empathize

*Explore, restate, acknowledge, normalize, validate*



#### Answer

*Answer their questions.*



#### Recommend

*"Because the HPV vaccine prevents against six types of cancer, I strongly recommend that your child receive it today."*



### Pilot and Purpose

SPARC is being piloted with 10 clinicians across 10 clinical sites to evaluate how AI-supported practice can improve communication around the HPV vaccine. Participants use SPARC to engage in simulated patient conversations, receive real-time feedback, and reflect on opportunities for growth.



### Why AI?

Artificial intelligence provides consistent, responsive, and data-informed feedback that traditional models cannot easily scale. SPARC combines this capability with expressive 3D avatars that preserve human warmth and authenticity, creating realistic and emotionally grounded learning experiences.



### Project Goal

Transition clinician communication training from in-person simulation to AI-supported reflective practice that is accessible, personalized, and aligned with evidence-based communication frameworks.

## DEVELOPMENT

SPARC-P combines insights from health communication, artificial intelligence, and digital design to create a training tool for clinicians. This collaborative project was developed to make complex clinical conversations easier to practice and evaluate.

Using a human-centered design approach, SPARC provides a realistic virtual environment where clinicians can build skills, receive feedback, and reflect on their communication strategies in a safe, supportive setting.



### Technology Framework

**Frontend (Unity WebGL):** Displays the 3D avatar and captures speech.

**Middleware:** WebSocket and HTTPS connections ensure security & responsiveness.

**Backend (HiPerGator):**

- » *Riva ASR + Riva TTS:* Speech recognition
- » *NeMo Guardrails:* Ensures appropriate dialogue
- » *Fine-Tuned LLMs:* Generate emotion and coaching feedback
- » *Reallusion + Audio2Face:* Produce lifelike voice and facial animation



### 3D Avatar Design

The avatar mirrors expressions using advanced 3D modeling, rigging, and animation.



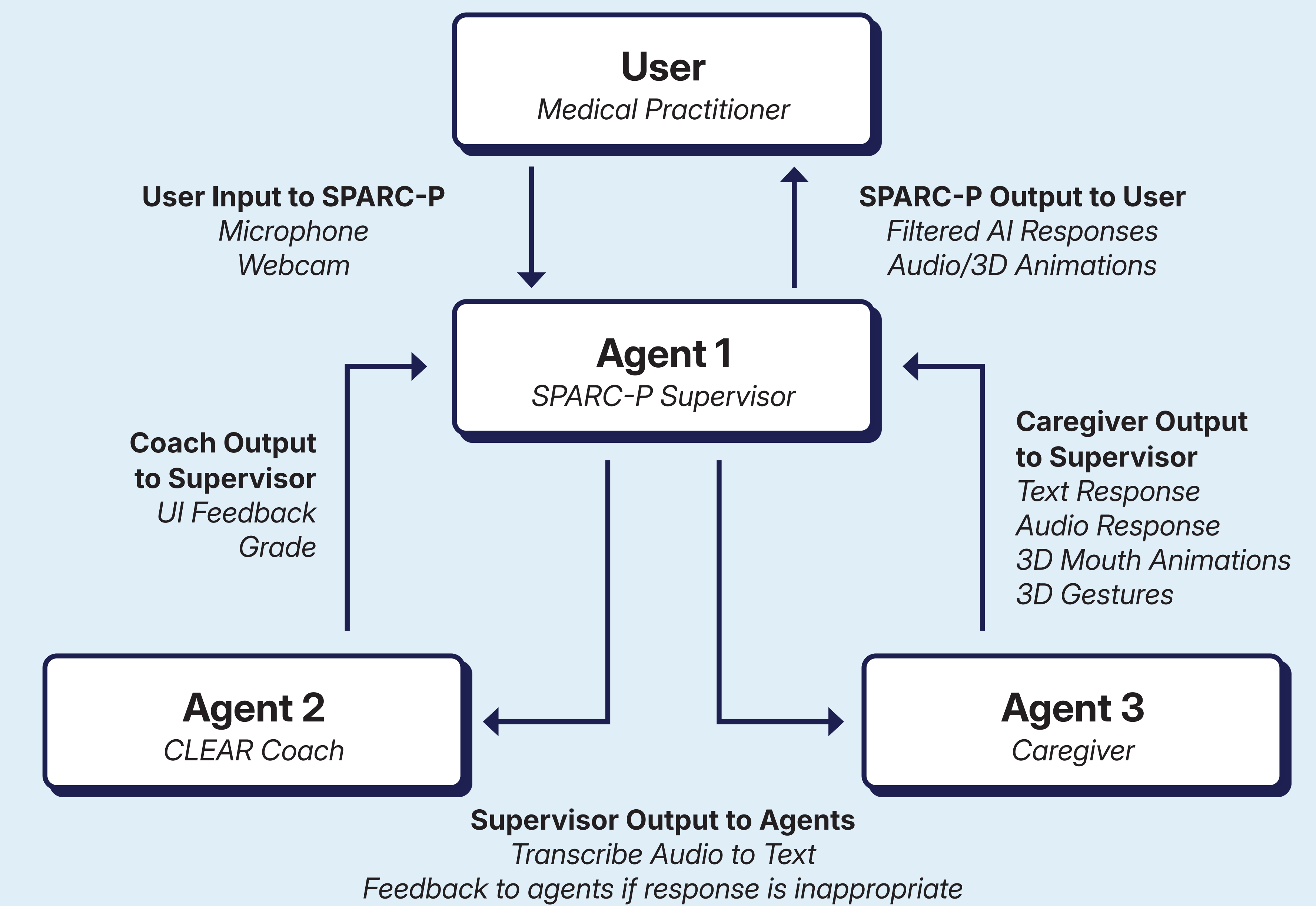
### Data & Training Inputs

- » Subject matter experts provide de-identified HPV counseling transcripts
- » Data curated for accuracy and privacy
- » Fine-tuned LLMs trained on authentic clinician–patient exchanges
- » Post-session analytics support reflective learning and skill tracking



### AI Agent System

SPARC-P uses a network of agents to simulate dialogue and provide feedback.



AGENT	ROLE	PURPOSE
Supervisor	Oversees interactions	Ensures safety, accuracy, and compliance
C-LEAR Coach	Evaluates clinician performance	Applies the C-LEAR rubric and provides objective feedback
Caregiver Avatar	Simulated patient	Delivers emotionally responsive dialogue and cues

## IMPACT

SPARC-P is transforming how clinicians learn to listen, empathize, and communicate with confidence. Through repeated, self-paced practice and guided reflection, clinicians can strengthen their communication skills and build trust with patients in ways that are practical, measurable, and sustainable.



### Expected Outcomes

- » Greater clinician confidence and empathy in patient conversations
- » Meaningful, data-informed feedback that supports continuous growth
- » Scalable training that extends learning beyond traditional classrooms
- » Lower cost and fewer logistical barriers compared to live simulations



### Aspirational Impact

SPARC-P demonstrates how thoughtful integration of technology can enhance the human elements of clinical care. By combining evidence-based communication strategies with the support of AI, SPARC helps clinicians refine both skill and sensitivity in their patient interactions.



### Long-term Vision

- » Expand through an NSF-funded project to reach clinicians across the cancer care continuum
- » Adapt the platform for other sensitive communication settings such as prognosis discussions and treatment decisions
- » Position UF as a national leader in advancing AI-supported clinician education

