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UX Research Portfolio

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ABOUT ME

I'm a **UX researcher** and **PhD candidate** in **Human-Computer Interaction** at the University of Cape Town, specialising in community-centred participatory design in developing contexts.

My work focuses on designing technologies that **respect community knowledge** and **build on existing social structures**, while collaborating with communities to create **situated, community-owned initiatives.**

RESEARCH METHODS

As a qualitative researcher, I choose research methods based on research questions, objectives, community contexts, as well as time and budget constraints. Some methods I have used include:

- PARTICIPATORY DESIGN
- INTERVIEWS AND FOCUS GROUPS
- CONTEXTUAL INQUIRY
- THEMATIC ANALYSIS
- DESIGN THINKING
- USABILITY TESTING
- PROTOTYPE TESTING
- SPECULATIVE DESIGN
- CO-DESIGN WORKSHOPS

CASE STUDY 1

How might we redesign a mobile app for detecting latent TB for overburdened healthcare workers in constrained contexts?

PROJECT OVERVIEW

Diagnosing latent tuberculosis infection requires patients to return to clinics for test assessment, creating **barriers** related to cost, time, and accessibility. A **mobile app was developed** to allow remote evaluation of the test using smartphone image capture, but the **existing interface was complex and difficult to follow.**

The **challenge** centred on **usability** in a **high-stakes clinical workflow**. Both patients and healthcare workers needed to capture **multiple images** at **precise orientations**, remember instructions, and manage sensitive health data. Previous evaluations identified difficulties understanding instructions, lengthy text, and challenges completing the image capture protocol.

The goal was to **redesign** the **interface** and **evaluate usability** in real **clinical contexts**, ensuring the technology could **function** within **resource-constrained** healthcare environments.

MY ROLE

- Lead UX Researcher
- Methodology design
- Participant recruitment
- Data analysis
- UI design
- Evaluation

TIMELINE

- 9 months
- Jan-Sep 2019
- 3 design iterations
- 20 participants total

METHODS

- Contextual inquiry
- Think-aloud protocol
- Iterative low-fidelity prototyping
- Design thinking
- Observation

The project redesigned the user interface of a mobile app that enables remote assessment of the tuberculin skin test using smartphone image capture and 3D reconstruction.

RESEARCH SETUP

1: EXPLORATION

- Visited **3 community health** clinics in Cape Town townships
- Observed **10 healthcare workers** performing TST assessments
- Conducted **unstructured interviews** to understand workflow, pain points, and **contextual constraints**
- Documented **environmental factors** (lighting, noise, patient volume, time pressure)

2: PROTOTYPING

- 3 rapid **design iterations with 10 graduate students**
- Used **clickable prototypes** to test interface and flow before engaging busy healthcare workers (Adobe XD)
- **Think-aloud protocol** to identify confusion points
- Each iteration took 1-2 weeks, allowing fast refinement

3: VALIDATION

- Final prototype **tested with the 10 healthcare workers** from initial observations
- Participants **captured images** of simulated TST indurations
- Post-Study System Usability Questionnaire (PSSUQ) to **measure satisfaction**
- Assertional **analysis** of think-aloud responses
- **Image quality** analysed by engineer collaborator

Publication: **Farao J.**, Malila B., Conrad N., Mutsvangwa T., Rangaka M.X., Douglas T.S., 2020. A user-centred design framework for mHealth. PLoS ONE 15(8): e0237910.

KEY INSIGHTS

Time scarcity is the dominant constraint

Healthcare workers have less than 5 minutes per patient in overburdened clinics.
Any app feature that requires more than 2-3 minutes to complete will not be adopted, regardless of its benefits.

Visual instructions vastly outperform text

Low English proficiency among some staff, combined with high workload and cognitive load, meant text was ignored.
When replaced with pictorial instructions and video demonstrations, comprehension improved dramatically.

Context-specific concerns emerged beyond usability

Community health workers raised safety concerns - carrying an expensive smartphone device made them targets for theft
Data privacy questions arose
Language preferences varied.

DESIGN SOLUTION

	ITERATION 1	ITERATION 2	ITERATION 3
Problem	Lengthy text instructions that users didn't read; complex technical language; unclear multi-step process	Silent video instructions unclear; difficulty differentiating text from background; users didn't realize pages were scrollable	Extreme difficulty capturing multiple images at correct angles and distance; uncertainty about when images were "good enough"
Solution	Paragraphs → pictorial instructions Single-page instruction overview Removed all jargon and technical terms Increased text size for readability	Added audio narration to instruction videos Better contrasted colour scheme Modified fonts Added scrolling indicator icon Reduced text density on instruction screens	Reduced from 9 images to 5 critical angles Added real-time visual guidance overlays during capture (gyros) Made submission buttons clearer Added image quality preview before submission

IMPACT

Product impact

Improved usability of a clinical screening app used in TB care workflows.
(PSSUQ Score <3)

Research impact

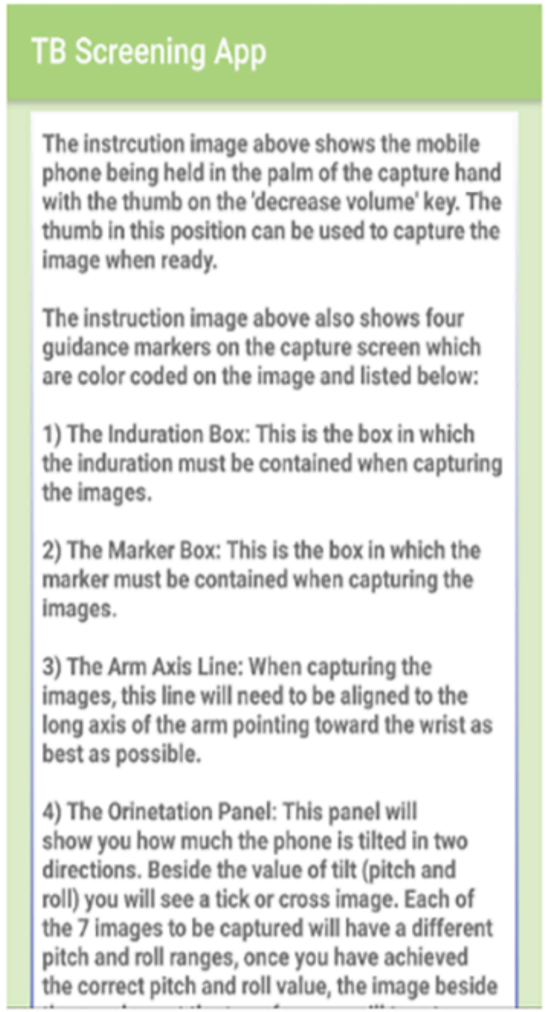
Demonstrated how combining design thinking with the Information Systems Research framework supports mHealth UX design

Practical impact

Highlighted contextual factors — safety, privacy, language — often missed in lab usability testing

The project shows how iterative UX research can bridge the gap between technical capability and real-world healthcare use.

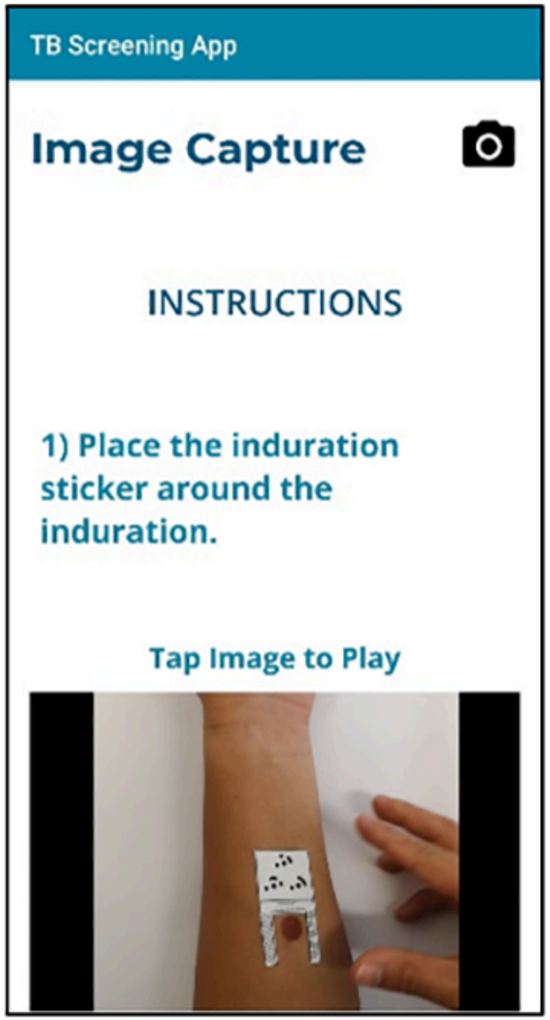
ITERATION 0

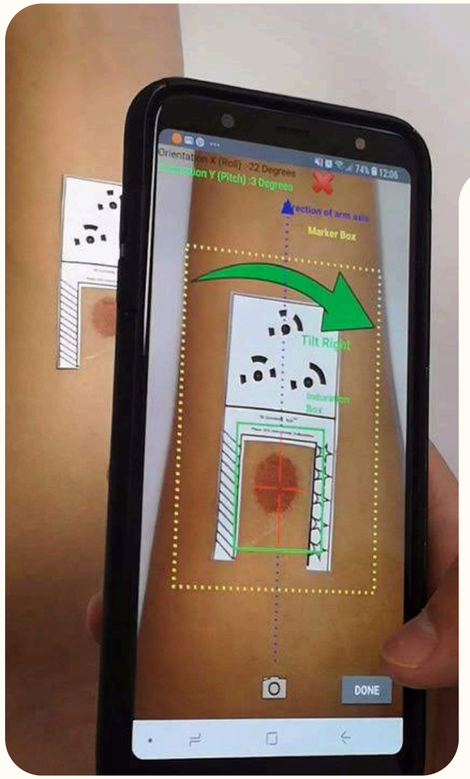


ITERATION 1

ITERATION 2

ITERATION 3



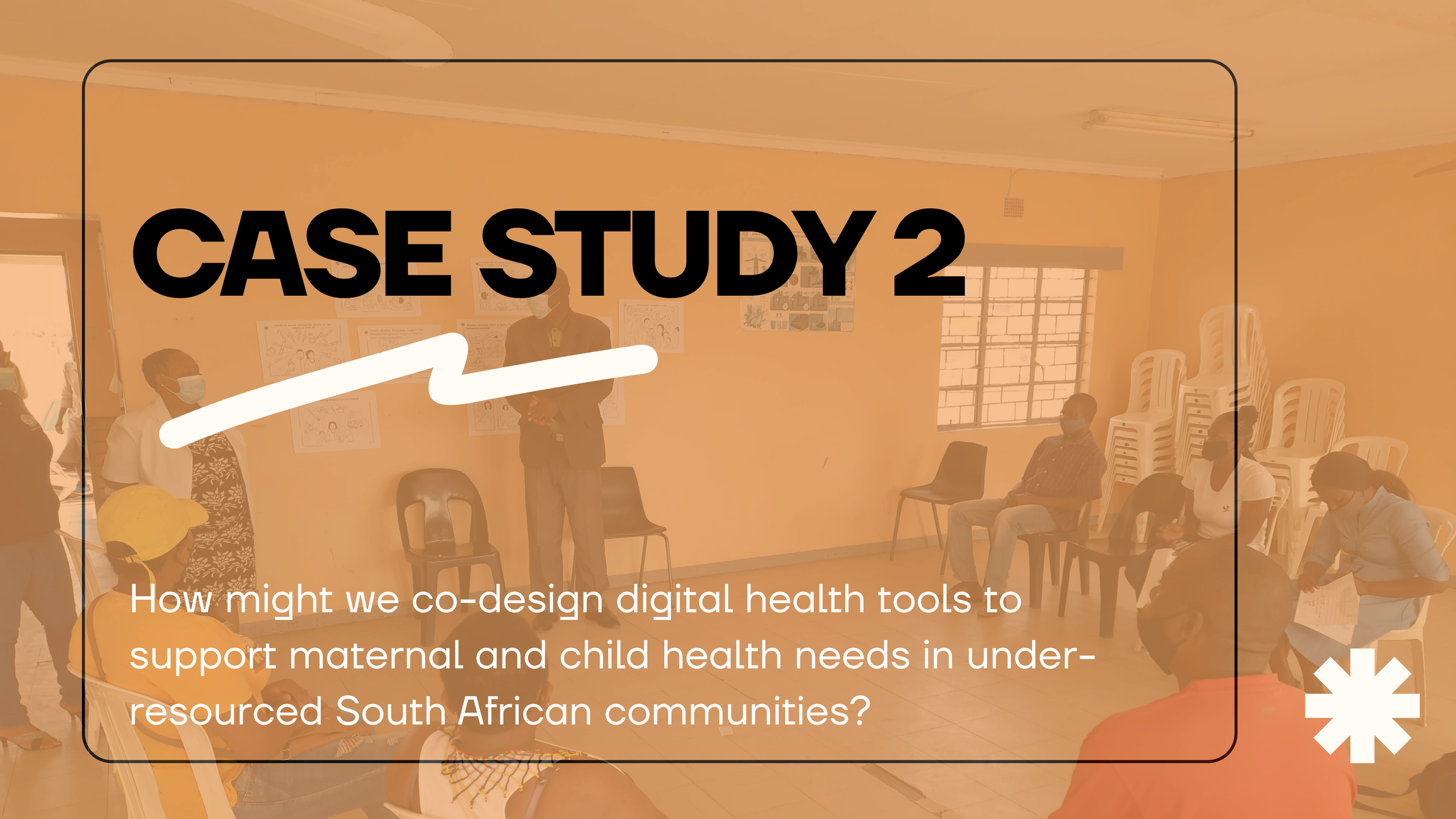


REFLECTIONS

The value of proxy testing. Using students for initial iterations before engaging busy end-users was crucial. This approach isn't about avoiding end-users—it's about respecting their time constraints. This taught me that "user-centered" can mean being strategic about when and how to engage them for maximum insight while minimizing their burden.

Context-specific factors often matter more than traditional usability metrics. I learned to understand the full sociotechnical system: organisational constraints, environmental conditions, safety concerns, and historical context all shape technology adoption as much as usability does.

Design for constraint, not ideals. The best design was often the simplest one that met the core need within real-world constraints.



CASE STUDY 2

How might we co-design digital health tools to support maternal and child health needs in under-resourced South African communities?

PROJECT OVERVIEW

Digital maternal health tools are expanding globally, yet **many fail in low-resource contexts** because they are designed around institutional priorities rather than **everyday caregiving realities**. Parents and caregivers often navigate **fragmented information**, **limited connectivity**, and **culturally misaligned digital services**.

The challenge extended **beyond usability** towards **relevance**. Maternal health practices are **collective**, shaped by families, community leaders, and local norms. Traditional UX approaches that focus on individual users risk missing these dynamics.

Additionally, prior research frequently relied on intermediaries rather than direct community participation, reinforcing **gaps between design intent and lived experience.** The goal was to **translate academic research into practical UX guidance** that **centres community** voice, supports connectedness, and informs more sustainable digital health design.

MY ROLE

- UX Researcher
- Methodology design
- Workshop facilitator
- Data analysis
- Author

TIMELINE

- 2 years
- 2021-2023
- Multi-phase research agenda
- 4 South African communities

METHODS

- Scoping review
- Stakeholder interviews (n=28)
- Community co-design workshops (n=8)
- Thematic and framework analysis.

RESEARCH SETUP

1: EXPLORATION

- **141 studies** across HCI, public health, and social sciences
- Output: **cross-disciplinary ecosystem view** of digital maternal health
- Key finding: community participation was often superficial or absent.

Publication: Till S, Mkhize M, **Farao J**, et al. 2023. Digital Health Technologies for Maternal and Child Health in Africa and Other Low- and Middle-Income Countries: Cross-disciplinary Scoping Review. J Med Internet Res 2023;25:e42161.

2: UNDERSTANDING

- **Stakeholder interviews**
- Engaged with researchers, NGOs, facilitators, community-based organisations
- Explored **challenges** in **community engagement** and digital intervention design.
- Output: shared codebook and workshop design

Coleman T., Till S., **Farao J.**, et al. 2023. Reconsidering Priorities for Digital Maternal and Child Health: Community-centered Perspectives from South Africa. Proc. ACM Hum.-Comput. Interact. 7. CSCW2. Article 290.

3: CO-DESIGN

- Conducted **participatory co-design workshops** with parents and community stakeholders across 4 SA provinces
- Used **design cards** and facilitated **generative activities**
- Output: priorities, prototype concept, design tensions
- Workshops highlighted how **cultural norms** and **geography** influence design methods

Till S., **Farao J**., et al. 2022. Community-based Co-design across Geographic Locations and Cultures: Methodological Lessons from Co-design Workshops in South Africa. PDC 2022.

KEY INSIGHTS

Care is coordinated through networks

Parents seek support through families, peers, and community leaders. Designing for a single “user” ignores how decisions are made.

Connectedness mattered more than information

Communities wanted communication, reassurance, and shared knowledge — not just educational content.

Institutional priorities misalign with lived priorities

Clinical metrics dominated existing interventions while emotional wellbeing, navigation, and language accessibility were underdeveloped.

Methods must adapt to context

Workshop structure, facilitation, materials, and pacing required cultural adaptation to remain inclusive.

OUTCOMES

Rather than a single product, the outcome was a **framework for designing digital maternal health in low-resource contexts.**

The research reframed digital maternal health from an **information problem to a socio-technical ecosystem problem** — involving relationships, infrastructure, and cultural practice.

This translation demonstrates how **research** can directly **inform** product **strategy**, **discovery**, and service **design**.

DESIGN IMPLICATIONS

Design for ecosystems, not screens
Map relationships between all stakeholders before defining features.

Prioritise connectedness features
Peer communication and reassurance flows may be of higher value than educational content.

Include communities as ongoing collaborators
Participation should shape roadmaps, not validate prototypes.

Embed cultural and linguistic flexibility
Interfaces and research methods must support localisation.

Treat digital inequality as a primary constraint
Connectivity, device sharing, and literacy shape feasible design patterns.

REFLECTIONS

Building trust takes time, but yields richer engagements. The temptation in academic research is to collect data quickly and move to analysis. But the most valuable insights came months into the project, after trust was established. Participants shared things they wouldn't have revealed in early interviews

"Design solutions" weren't what participants wanted first. Participants didn't want to jump to solutions before the problem was fully understood and acknowledged. They wanted agency in defining the actual issues, not just feedback on proposed solutions.

Consent is ongoing, not transactional. Ethical practice requires continuous consent renegotiation as relationships evolve and participants better understand the research.

CASE STUDY 3

How might we co-design AI technologies for resource-constrained communities to support their priorities and initiatives?

PROJECT OVERVIEW

Artificial intelligence is increasingly shaping everyday life, yet marginalised **communities** are **rarely involved** in **defining its direction**. Their languages, cultural practices, and lived realities are often absent from datasets, design processes, and product strategy.

The challenge was framed as follows: how do you help people **meaningfully participate** in the design of a **technology** that is **abstract, technical,** and **future-oriented**?

Additionally, speculative conversations about AI risk are being dominated by **technical feasibility** rather than **community priorities**. Participants also faced **constraints** such as affordability, connectivity, and uneven digital literacy.

The goal was to **translate** speculative research into **practical guidance** for designing culturally relevant, accessible, and community-centred AI **systems**.

MY ROLE

- Researcher
- Workshop facilitator
- Co-designed research protocol
- Data synthesis

TIMELINE

- 12 months
- Nov ‘24-Dec ‘25
- Preparatory engagements
- 3 workshops

METHODS

- Speculative co-design workshops
- Technology probes
- Reflective Thematic Analysis

The study engaged a low-income community in Cape Town to collectively imagine what AI should do, how it should work, and how it could benefit their lives.

RESEARCH SETUP

1: EXPLORATION

- Workshop series of three sessions (~18 participants per workshop)
- Explored perceptions, speculation, and prototyping
- Output: speculative artefacts and themes

2: UNDERSTANDING

- Technology probes to better imagine AI in community
- Participants explored AI tools (chatbots, media generation, agriculture systems)
- Output: grounded understanding of possibilities

3: CREATION

- Speculative artefact creation based on previous workshops
- Participants created conceptual AI systems for education, safety, agriculture, and creative work
- Output: design futures, prototypes, and functional directions

Oluwatuyi, R., Pillay, V., Mazwi, J., Castro, A., **Farao, J**., et al. 2026. Collectively Reimagining Artificial Intelligence with Marginalized Communities. Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26). (Publishing in April 2026)

KEY INSIGHTS

AI is understood through everyday usefulness

Participants framed AI primarily as support for work, education, and caregiving rather than an abstract technology.

Cultural and linguistic representation is central

Communities prioritised AI that speaks local dialects and reflects cultural identity.

Affordability shapes feasibility more than innovation

Participants imagined ambitious systems but consistently constrained them around cost and access.

Perceptions of AI vary generationally

Older participants expressed anxiety about displacement while younger participants showed curiosity and experimentation.

OUTCOMES

The research generated a **community-centred AI design lens** — reframing AI from a capability-driven technology to a culturally situated service ecosystem.

Speculative artefacts illustrated how AI could function as **community infrastructure**: resource hubs, education systems, safety tools, creative assistants, and sustainable agriculture support.

Some participants became informal **"AI translators"** for their networks, explaining concepts to others using workshop language. This indicated increased capacity on AI tech.

DESIGN IMPLICATIONS

Design AI for context, not universality.
AI should adapt to local language, infrastructure, and socio-economic conditions.

Representation as a UX requirement.
Language, identity, and cultural practice influence trust and adoption.

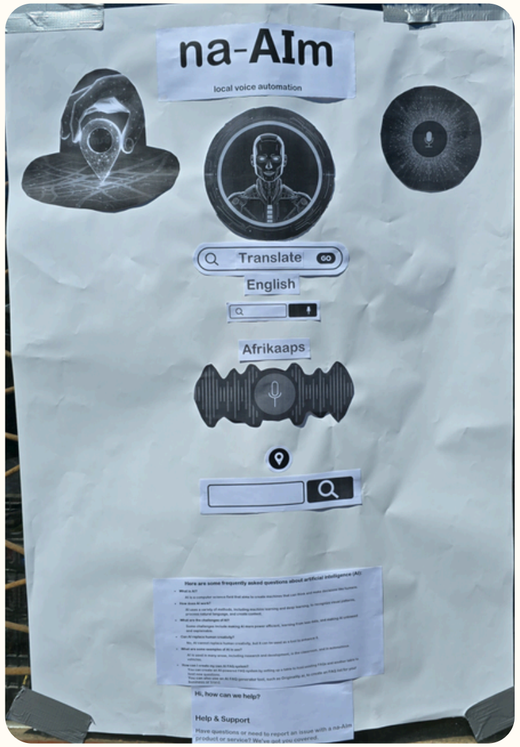
Use speculative methods to explore emerging tech
Futures workshops surface risks, values, and expectations earlier than traditional discovery.

Support agency, not automation.
Communities wanted AI that augments decision-making rather than replaces it.

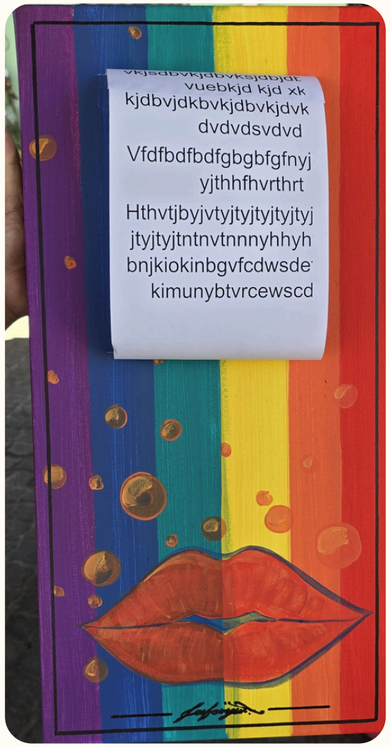
Ground AI strategy in real constraints.
Offline capability, affordability, and device sharing must shape product design.

PROTOTYPES

FITBOT: An AI Fitness assitant to support physical well-being in an area where it is dangerous to exercise outside



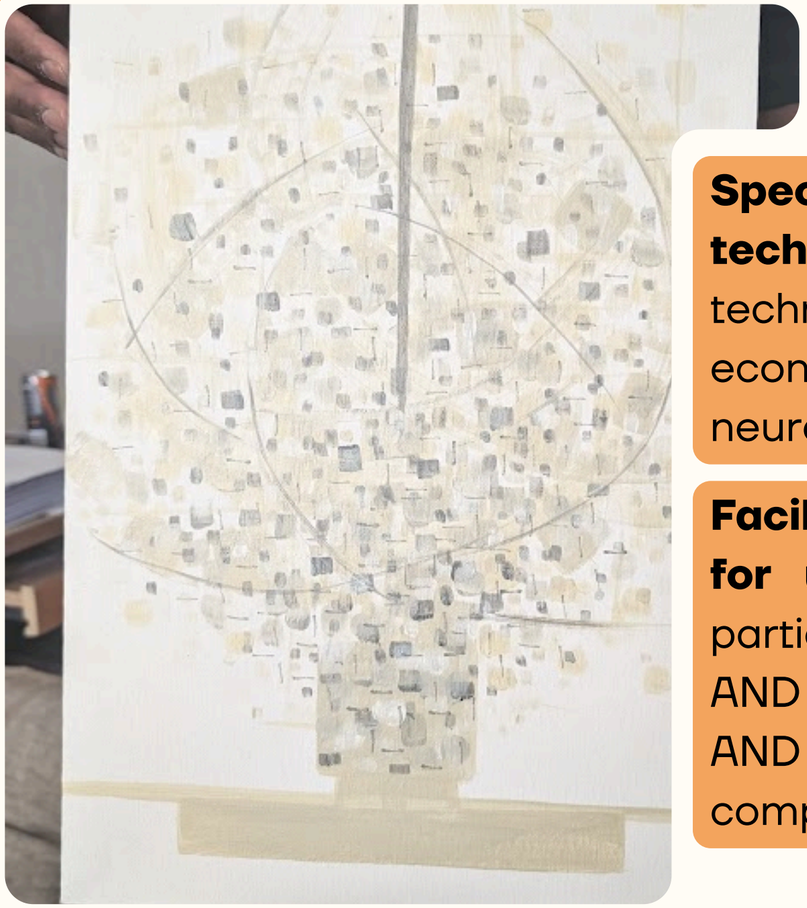
na-AIm: An AI translator for local dialects to support cultural heritage preservation



A local language chatbot for daily use

These prototypes illustrate how participants envisioned AI embedded in daily life.

REFLECTIONS



Community artist’s interpretation of AI

Speculative design helps communities engage abstract technical concepts. The key was not to explain how AI works technically, but to explore what AI might do socially, economically, politically. Participants don't need to understand neural networks to deliberate about algorithmic hiring.

Facilitating futures conversations requires holding space for uncertainty. The most valuable moments came when participants sat with contradictions—AI might create new jobs AND eliminate existing ones; it might improve healthcare access AND increase surveillance. Real deliberation happens in that complexity, not in simplified pro/con debates.

Community concerns differ from academic AI ethics priorities. Academic AI ethics focuses heavily on algorithmic bias, fairness, privacy. Participants cared about these but prioritised economic security, local control, and collective well-being far more.

Thank you for your time!
Please feel free to reach out to inquire further about ongoing work.

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