

Technical Assessment: OMANI-Therapist-Voice

Voice-Only Omani Arabic Mental Health Chatbot *Real-time conversational AI using*

Problem Statement

Build a comprehensive mental health support chatbot that communicates exclusively through voice in Omani Arabic dialect. The system must provide culturally sensitive, therapeutic-grade conversations with real-time speech processing capabilities.

Technical Requirements

Core System Architecture

Speech Processing Pipeline:

- Voice Capture & STT:** Real-time audio capture with Omani Arabic speech recognition
- Intent Analysis:** Emotional state detection and therapeutic context understanding
- Dual-Model Response Generation:** Primary GPT-4o with Claude Opus 4 fallback/validation
- Cultural Adaptation:** Gulf-specific mental health terminology and cultural sensitivity
- TTS Output:** Natural-sounding Omani Arabic voice synthesis
- Real-time UI:** Low-latency conversational interface

Technical Specifications

Performance Constraints:

- End-to-end latency: <20 seconds per conversation turn

Language & Cultural Requirements:

- Dialect Accuracy:** Authentic Omani Arabic
- Cultural Sensitivity:** Islamic values, family dynamics, social norms
- Therapeutic Terminology:** Proper mental health vocabulary in Arabic
- Code-switching:** Handle Arabic-English mixing naturally
- Emotional Nuance:** Detect and respond to subtle emotional cues

Clinical & Safety Standards

Therapeutic Capabilities:

- Active listening and empathetic responses
- Cognitive Behavioral Therapy (CBT) techniques adaptation
- Crisis intervention protocols
- Cultural trauma-informed approaches
- Religious/spiritual integration when appropriate

Safety Mechanisms:

- Suicide risk assessment and escalation protocols
- Harmful content detection and prevention
- Professional referral triggers
- Session recording consent and data protection
- Emergency contact integration

Evaluation Criteria

Technical Excellence

- **Architecture Quality:** Clean, scalable, production-ready code
- **Latency Optimization:** Real-time performance under load
- **Error Handling:** Graceful degradation and recovery
- **Security Implementation:** HIPAA-compliant data handling
- **Code Quality:** Documentation, testing, maintainability

Language & Cultural Competency

- **Dialect Authenticity:** Native-level Omani Arabic fluency
- **Cultural Appropriateness:** Understanding of Gulf mental health stigma
- **Therapeutic Language:** Proper clinical terminology adaptation
- **Emotional Intelligence:** Nuanced response to cultural cues
- **Religious Sensitivity:** Islamic counseling integration

Clinical Effectiveness

- **Therapeutic Techniques:** Evidence-based intervention methods
- **Safety Protocols:** Crisis detection and intervention
- **Conversation Quality:** Empathy, active listening, guidance
- **Professional Standards:** Ethical counseling practices
- **User Experience:** Engaging, supportive interaction flow

Innovation & Problem-Solving

- **Dual-Model Strategy:** Creative use of GPT-4o + Claude Opus 4
- **Cultural Innovation:** Unique insights into Omani mental health needs
- **Performance Optimization:** Creative latency and quality improvements

Deliverables

Core Application

1. **Working Voice Interface:** Deployed web application or mobile app
2. **Complete Source Code:** GitHub repository with full documentation
3. **Architecture Documentation:** System design, data flow, model integration
4. **Demo Video:** 10-minute conversation showcase

Technical Documentation

5. **Model Evaluation Report:** Comparative analysis of dual-model approach
6. **Cultural Adaptation Guide:** Omani Arabic implementation details
7. **Safety Protocol Documentation:** Crisis intervention and escalation procedures
8. **Performance Benchmarks:** Latency, accuracy, and scalability metrics

Additional Requirements

9. **Test Conversation Logs:** 5+ different therapeutic scenarios
10. **Deployment Instructions:** Production setup and maintenance guide
11. **Future Roadmap:** Scaling and improvement recommendations

Test Scenarios

Required Demonstration Cases:

- General anxiety consultation in Omani Arabic
- Family relationship counseling with cultural context
- Work stress management session
- Crisis intervention simulation (controlled environment)
- Code-switching conversation (Arabic-English mixing)

Ethical Requirements:

- Transparent AI disclosure to users
- Data privacy and anonymization protocols
- Professional supervision integration pathways
- Cultural competency validation by native speakers

Timeline: 4 days

References: <https://ali-khaledi1989.medium.com/technical-assessment-in-the-age-of-ai-finding-the-builders-not-test-takers-08bfebcc4368>

<https://docs.anthropic.com/en/docs/build-with-claude/prompt-engineering/overview>