WING AI

TECHNICAL FACTSHEET

1 CORE TECHNOLOGY OVERVIEW

Problem Solved:

- Post-pandemic loneliness is a global health crisis (WHO), yet dating & social apps are failing due to superficiality, low engagement, and ineffective matching.
- Bond is a voice-first AI-driven social platform that helps people connect authentically using AI-powered speech recognition, text-to-speech (TTS), and deep and granular personality profiling.

Tech Stack:

- AI Models: Generative AI foundation model (AWS Bedrock), HEXACO-based personality profiling, AI-driven speech-to-text (STT) and text-to-speech (TTS).
- Infrastructure: Cloud-native AWS-based (VPC, Lambda, Bedrock, DynamoDB).
- Voice Pipeline: On-device speech recognition for privacy + realistic AI-generated TTS for natural conversations.

Unique Selling Proposition (USP)
Key Innovations:

- AI Wingmate: A personalized AI companion that learns about users through natural spoken conversations.
- Real-time AI voice synthesis (TTS): Users receive responses spoken in a natural, personalized AI voice rather than text.
- Voice-first interactions: No photo-swiping, but AI analyzes voice, personality, and emotions for deep compatibility.
- AI and algorithmic granular matching based on HEXACO personality model, voice analysis and interests

Competitive Advantage:

- More engaging & human-like than dating apps like Tinder, Bumble & Hinge.
- Stronger matches via HEXACO model personality analysis & voice-based emotional detection.
- Multi-modal AI creates dynamic user avatars based on voice interactions, reducing bias and focussing on what people bond over

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2 SCALABILITY & PERFORMANCE

Infrastructure:

- Cloud-native AWS Bedrock and serverless API architecture ensures 99.99% uptime.
- Fully headless design allows integration with smart glasses, VR, and IoT devices.

Traffic Handling:

- Supports 100,000+ concurrent users with real-time voice-to-text, AI-generated TTS responses and AI matching.

Security & Compliance:

- Zero-retention voice processing: On-device AI never stores raw user conversations.
- Encrypted user data & multi-factor authentication (MFA).
- Bias & fairness tested via AWS SageMaker Clarify.

Risks & Mitigation

- Voice processing bias → Solution: AWS SageMaker Clarify + user feedback bias reporting.
- Privacy concerns → Solution: Fully encrypted data, zero-retention processing, and transparent AI use.

- High cloud costs for AI processing → Solution: Hybrid on-device & cloud AI model execution.

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AI/ML Architecture

Model Architecture:

- AWS Bedrock-based multimodal foundation model with fine-tuned personality & voice interaction capabilities.

Speech-to-intent pipeline:

- Automatic Speech Recognition (ASR) (Whisper v3-based or AWS Transcribe).
- Personality Model (HEXACO-based) for deep psychological profiling.
- Proprietary WingAI matching engine analyzes on personality traits, interests, voice, and intent.

Text-to-Speech (TTS) Pipeline:

- AI-generated natural voice synthesis using: OpenAI Realtime Voice API for ultra-fast, human-like speech synthesis with lifelike prosody and emotional expressiveness.

Inference Strategy:

- On-device AI processing for fast speech recognition and real-time user interactions.
- Cloud-based inference for deep NLP tasks that require larger computational power.
- Edge computing hybrid model ensures real-time processing with minimal cloud cost overhead.

Model Customization & Adaptability:

- Adaptive AI Wingmate that learns user preferences, conversation style, and emotional cues over time.
- Fine-tuned Foundation Model (FM) to personalize recommendations while ensuring low-latency execution.

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Speech Recognition & Text-to-Speech (TTS) Engine
Automatic Speech Recognition (ASR):

Hybrid ASR approach:

- On-device processing for privacy and low-latency user interactions.
- Cloud-based AI inference for advanced speech processing, intent recognition, and personality analysis.

Targeted speech recognition accuracy:

- 95-98% accuracy in quiet environments and 85-95% in noisy conditions.
- Advanced noise filtering to handle real-world environments with background disturbances.
- Multilingual support with continuous fine-tuning for dialects and accents.

Text-to-Speech (TTS) Engine:

Real-time AI-generated speech responses using:

- OpenAI Realtime Voice API for ultra-fast, natural, and expressive voice interactions.
- Emotion-aware voice modulation powered by Hume AI & AWS Bedrock.

Dynamic voice adaptation:

- AI adjusts speaking speed, tone, and expressiveness based on the user 's mood.
- Latency-optimized TTS ensures seamless, conversational interactions.

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AI Scalability & Deployment

Cloud Infrastructure:

AWS Cloud-Native Architecture:

- Serverless API-based execution (AWS Lambda + DynamoDB).
- AWS Bedrock AI models run privately in Virtual Private Cloud (VPC) ensuring data security & privacy compliance.

Scalable Multi-Agent AI System:

- AI Wingmate orchestrates multiple specialized AI agents for intent recognition, voice synthesis, and matching.
- Each agent has a dedicated role (e.g., HEXACO personality model agent, Emotional AI agent, Matching AI agent).

Latency Optimization:

- Optimized speech pipeline ensures sub-300ms total response latency.
- Real-time AI processing across multiple conversational contexts.
- Serverless execution auto-scales to handle 100,000+ concurrent users.
- Security, Safety, Compliance & AI Ethics

Data Privacy & Protection:

- On-device AI execution ensures that user conversations are never stored.
- End-to-end encryption (AES-256) for secure data transmission & storage.
- Zero-trust security framework with role-based access controls (RBAC).

Platform Safety & Identity Verification (AWS Recognition):

- AWS Recognition Identity Verification is integrated to ensure all platform users are real individuals.
- Prevents fake accounts, catfishing, and bot-driven spam.
- Uses facial verification to confirm user identity while ensuring privacy compliance.
- Works seamlessly across iOS, Android, and web environments.

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AI-driven content moderation:

- Voice & text-based moderation AI detects harmful or inappropriate behavior.
- Real-time flagging of harassment, deepfakes, and AI-generated abuse.

Bias Mitigation & AI Ethics:

- AWS SageMaker Clarify for ongoing bias detection in AI recommendations.
- HEXACO-based personality assessment eliminates visual appearance biases from traditional dating/social apps.
- User-reported bias detection & AI feedback loop allows continuous improvement.

Regulatory Compliance:

- Fully GDPR & HIPAA-compliant data handling for sensitive personal & biometric information.
- Zero-data retention policy ensures all AI interactions are ephemeral unless explicitly stored by the user.

Performance & Benchmarking

Speech Recognition Accuracy:

- 95-98% accuracy in quiet environments with multi-accent speech modeling.
- Advanced denoising & emotional signal extraction for real-world accuracy.

Response Speed & Latency:

- Targeting sub-300ms end-to-end voice interaction (ASR + AI response + TTS).
- Real-time AI processing ensures smooth, engaging voice interactions.

Scalability & Concurrency:

- Supports 100,000+ concurrent voice interactions with serverless auto-scaling architecture.
- Dynamic AI voice synthesis adapts to user interactions in real-time.

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