

Chakrai - AI-Powered Wellness & Mental Health Platform

Chakrai is a comprehensive wellness application that combines AI-powered chat, guided meditation, journaling, analytics, and therapeutic tools to support mental health and personal growth.

Current Status: STABLE & FUNCTIONAL

Core Features Working:

- AI Chat with voice & TTS integration
- Guided Meditation with ElevenLabs voice synthesis
- Journal interface with mood tracking
- Analytics dashboard with insights
- User session management
- HIPAA-compliant authentication
- Modern responsive UI

Recently Fixed:

- Meditation audio playback (TTS integration working)
- Vite proxy configuration (server port alignment)
- React audio element management

Architecture

Frontend (React + TypeScript)

- **Framework:** React 18 with TypeScript
- **Build Tool:** Vite with SWC
- **UI Library:** Tailwind CSS + Radix UI components
- **State Management:** React Query + Context providers
- **Audio:** Native Web Audio API with ElevenLabs integration

Backend (Node.js + Express)

- **Runtime:** Node.js with Express server
- **Database:** PostgreSQL with Drizzle ORM
- **Authentication:** HIPAA-compliant session management

- **APIs:** OpenAI GPT-4, ElevenLabs TTS, Stripe payments
- **Security:** CORS, rate limiting, helmet middleware

Infrastructure

- **Development:** Concurrently runs client (5173) & server (5001)
- **Database:** Neon PostgreSQL with connection pooling
- **File Storage:** Multer for audio uploads
- **Environment:** dotenv configuration management

Core Features

1. AI Chat Interface (**BeautifulChat**)

- Multi-model AI support (GPT-4, Grok-4)
- Voice input with speech-to-text
- Text-to-speech responses with voice selection
- Real-time typing indicators
- Message history persistence

2. Guided Meditation (**BeautifulMeditation**)

- 6 meditation types: mindfulness, breathing, guided, visualization
- ElevenLabs voice synthesis (Natasha, Natasha's Husband)
- Duration options: 10-25 minutes
- Progress tracking with visual timer
- Volume controls and mute functionality
- Silent meditation fallback

3. Enhanced Journal (**EnhancedJournalInterface**)

- Rich text journaling with mood tracking
- Daily prompts and reflection questions
- Entry categorization and tagging
- Mood analytics and trends

4. Analytics Dashboard (**AnalyticsDashboard**)

- Mental health insights and trends

- Journal entry analysis
- Mood pattern recognition
- Progress visualization with charts

5. User Management

- Anonymous user sessions with device fingerprinting
- HIPAA-compliant data handling
- Privacy controls and data export
- Secure session management

Setup & Development

Prerequisites

bash

- Node.js 18+
- PostgreSQL database
- OpenAI API key
- ElevenLabs API key (for TTS)

Environment Variables

Create a `.env` file:

env

Database

DATABASE_URL=postgresql://user:pass@host:port/dbname

APIs

OPENAI_API_KEY=sk=...

ELEVENLABS_API_KEY=...

Security

COOKIE_SECRET=your-secret-key

NODE_ENV=development

Server

PORT=5001

Installation & Startup

```
bash

# Install dependencies
npm install

# Start development servers (client + server)
npm run dev

# Client only (port 5173)
npm run dev:client

# Server only (port 5001)
npm run dev:server

# Build for production
npm run build

# Start production server
npm start
```

Database Setup

```
bash

# Push schema to database
npm run db:push

# Run migrations (if any)
npm run db:migrate
```

Application Structure

```
chakrai/
├── client/src/      # React frontend
│   ├── components/ # UI components
│   ├── contexts/   # React contexts
│   ├── utils/      # Utility functions
│   └── App.tsx      # Main app component
├── server/          # Express backend
│   ├── routes/      # API endpoints
│   └── auth/         # Authentication
```

```
| | — middleware/..... # Server middleware
| | — index.ts..... # Server entry point
| — shared/..... # Shared utilities
| — types/..... # TypeScript definitions
| — vite.config.ts..... # Build configuration
```

Key Components

Navigation & Layout

- `ModernLayout`: Main application shell with sidebar navigation
- `ModernDashboard`: User dashboard with quick actions
- `NeonCursor`: Animated cursor effect

Wellness Tools

- `BeautifulMeditation`: Guided meditation with TTS
- `PersonalityReflection`: Mood tracking and reflection
- `VoluntaryQuestionDeck`: Self-assessment tools
- `ChallengeSystem`: Goal setting and challenges

Admin & Business

- `TherapistPortal`: Provider dashboard
- `AdminPortal`: System administration
- `ChakraPlans`: Subscription management
- `AnalyticsDashboard`: Insights and reporting

Security & Compliance

HIPAA Compliance

- Encrypted data transmission (HTTPS)
- Secure session management
- Audit logging for health data access
- User consent management
- Data anonymization options

Authentication

- Device fingerprinting for anonymous users
- Session-based authentication
- CSRF protection
- Rate limiting on sensitive endpoints

Data Privacy

- Minimal data collection
- User-controlled data retention
- Secure data deletion
- Privacy-first design principles

API Integrations

OpenAI GPT-4

- Chat completions for AI conversations
- Speech-to-text for voice input
- Content moderation and safety

ElevenLabs TTS

- High-quality voice synthesis
- Multiple voice options
- Optimized audio streaming

Stripe (Ready for Integration)

- Subscription billing
- Payment processing
- Usage tracking

Performance & Monitoring

Client Performance

- Code splitting with React lazy loading
- Optimized bundle sizes

- Efficient state management
- Audio streaming optimization

Server Performance

- Connection pooling for database
- Rate limiting for API protection
- Efficient session management
- Memory optimization for audio processing

Known Issues & Limitations

Minor Issues

1. Some debug console logs remain (non-critical)
2. Error boundary could be enhanced
3. Audio cleanup could be more aggressive

Planned Improvements

1. Enhanced offline support
2. Push notifications
3. Mobile app development
4. Advanced analytics
5. Therapist matching system

Development Workflow

Code Quality

```
bash
```

```
# Type checking
```

```
npm run check
```

```
# Linting and formatting (available)
```

```
npm run lint
```

```
npm run format
```

```
# Testing
```

```
npm run test
```

Database Management

```
bash
```

```
# Generate migrations  
npx drizzle-kit generate
```

```
# Push schema changes  
npm run db:push
```

```
# Database introspection  
npx drizzle-kit introspect
```



Deployment

Production Build

```
bash
```

```
# Build client and server  
npm run build
```

```
# Start production server  
npm start
```

Environment Setup

- Configure production database
- Set secure environment variables
- Enable HTTPS in production
- Configure domain and SSL

Health Monitoring

- Health check endpoint: `/healthz`
- Server status monitoring
- Database connection verification

Future Roadmap

Short Term (1-3 months)

- ☐ Enhanced meditation library
- ☐ Mobile responsive improvements
- ☐ Advanced analytics features
- ☐ Therapist portal enhancements

Medium Term (3-6 months)

- ☐ Mobile app development
- ☐ AI therapy session analysis
- ☐ Group meditation features
- ☐ Advanced personalization

Long Term (6+ months)

- ☐ VR therapy integration
- ☐ Biometric data integration
- ☐ Clinical trial capabilities
- ☐ Global wellness community

Contributing

Development Guidelines

1. Follow TypeScript best practices
2. Use React hooks for state management
3. Implement proper error handling
4. Write descriptive commit messages
5. Test features thoroughly

Code Standards

- ESLint configuration for code quality
- TypeScript for type safety
- Prettier for code formatting
- Conventional commits for git history

Support

For technical issues or questions:

- Review console logs for debugging
- Check API key configuration
- Verify database connectivity
- Ensure proper environment setup

License

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Current Version: 1.0.0

Last Updated: September 2025

Status: Stable & Production Ready