Motion by Aiselu

A mobile application for physiotherapists that revolutionizes patient interaction documentation through voice dictation, AI-powered SOAP report generation, and intelligent exercise illustration integration.

🎯 Overview

Motion by Aiselu streamlines the documentation process for physiotherapists by:

- **Voice Transcription**: Dictate patient interactions naturally
- **AI-Powered Documentation**: Automatically generate structured SOAP reports
- **Smart Exercise Integration**: Search and attach relevant exercise illustrations
- **Time Efficiency**: Reduce documentation time from 20+ minutes to under 5 minutes

🏗️ Architecture

This is a monorepo containing both backend and frontend components:

```
motion-aiselu/
├── backend/          # Python FastAPI + Google ADK agents
├── frontend/         # Flutter mobile application
└── docs/            # Additional documentation
```

Technology Stack

Backend:

- **Framework**: FastAPI (Python 3.11+)
- **AI/ML**: Google ADK (Agents Development Kit) with Gemini
- **Database**: PostgreSQL with SQLAlchemy ORM
- **Cache**: Redis
- **Task Queue**: Celery
- **Image Search**: Bing Image Search API via MCP

Frontend:

- **Framework**: Flutter
- **State Management**: TBD
- **Local Storage**: SQLite

🚀 Getting Started

Prerequisites

- Python 3.11 or higher
- PostgreSQL 15+

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- Redis 7+
- Flutter SDK (for frontend development)
- uv (Python package manager)

Backend Setup

1. **Clone the repository**

```
git clone https://github.com/yourusername/motion-aiselu.git
cd motion-aiselu
```

2. **Set up the backend environment**

```
cd backend
uv venv
source .venv/bin/activate  # On Windows: .venv\Scripts\activate
uv pip install -e ".[dev]"
```

3. **Configure environment variables**

```
cp .env.example .env
# Edit .env with your API keys and configuration
```

4. **Start required services**

```
# Using Docker Compose (recommended)
docker-compose up -d postgres redis

# Or install locally
# - PostgreSQL: https://www.postgresql.org/download/
# - Redis: https://redis.io/download
```

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5. **Initialize the database**

```
# Create database
createdb motion_aiselu

# Run migrations
alembic upgrade head
```

6. **Run the backend server**

```
uvicorn src.motion_aiselu.main:app --reload
```

The API will be available at `http://localhost:8000`
API documentation at `http://localhost:8000/docs`

Frontend Setup

```
cd frontend
# Flutter setup instructions coming soon
```

🏷 Features

Core Functionality

1. **Voice Dictation**
    - Real-time transcription of physiotherapist-patient interactions
    - Support for multiple languages
    - Background noise reduction
2. **SOAP Report Generation**
    - AI-powered conversion of transcripts to structured SOAP format
    - Intelligent extraction of:
        - Subjective: Patient complaints and symptoms
        - Objective: Observable findings and measurements
        - Assessment: Professional evaluation
        - Plan: Treatment recommendations and exercises
3. **Exercise Illustration Integration**
    - Automatic detection of exercises mentioned in reports
    - Bing image search integration for finding relevant illustrations
    - Thumbnail preview and selection interface
    - Proper attribution and copyright compliance
4. **Report Management**
    - Save and edit generated reports
    - Export to PDF/Word formats
    - Patient history tracking
    - Secure cloud synchronization

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Workflow

1. **Start Session**: Physiotherapist begins a new patient session

2. **Dictate**: Record the interaction naturally
3. **Process**: AI converts transcript to SOAP report
4. **Review**: Edit and refine the generated report
5. **Enhance**: Add exercise illustrations if needed
6. **Export**: Save and share the final report

🛠 Development

Project Structure

```
backend/
├── src/motion_aiselu/
│   ├── agents/          # ADK agents for report generation
│   ├── tools/           # Tools for specific tasks
│   ├── api/             # FastAPI endpoints
│   ├── models/          # Database models
│   ├── services/        # Business logic
│   └── utils/           # Utilities and helpers
└── tests/               # Test suite
```

Running Tests

```
# Backend tests
cd backend
pytest

# Run with coverage
pytest --cov=src/motion_aiselu

# Run specific test categories
pytest tests/unit
pytest tests/integration
```

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Code Quality

```
# Format code
black src tests
isort src tests

# Lint
ruff check src tests
mypy src
```

🔑 API Endpoints

Core Endpoints

- `POST /api/v1/sessions/start` - Initialize a new dictation session
- `POST /api/v1/sessions/{session_id}/transcript` - Submit voice transcript
- `GET /api/v1/sessions/{session_id}/report` - Retrieve SOAP report
- `POST /api/v1/sessions/{session_id}/report/confirm` - Confirm final report
- `POST /api/v1/sessions/{session_id}/exercises/{exercise}/search` - Search exercise images
- `GET /api/v1/sessions/{session_id}/report/export` - Export report (PDF/Word)

Full API documentation available at `/docs` when running the server.

🔒 Security & Privacy

- **Data Encryption**: All data encrypted at rest and in transit
- **HIPAA Compliance**: Designed with healthcare privacy requirements in mind
- **Authentication**: JWT-based authentication for all API endpoints
- **Audit Logging**: Comprehensive logging of all data access
- **Data Retention**: Configurable retention policies

🤝 Contributing

We welcome contributions! Please see our Contributing Guidelines for details.

1. Fork the repository
2. Create your feature branch (`git checkout -b feature/AmazingFeature`)
3. Commit your changes (`git commit -m 'Add some AmazingFeature'`)
4. Push to the branch (`git push origin feature/AmazingFeature`)
5. Open a Pull Request

📄 License

This project is licensed under the MIT License - see the LICENSE file for details.

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🙏 Acknowledgments

- Google ADK team for the agent framework
- Anthropic for AI consultation
- The physiotherapy community for valuable feedback

📞 Contact

- Website: https://aiselu.ai/motion

🗺️ Roadmap

Phase 1 (Current)

- [x] Basic voice transcription

- [x] SOAP report generation
- [ ] Exercise image search
- [ ] PDF export

Phase 2

- [ ] Multi-language support
- [ ] Offline mode
- [ ] Template customization
- [ ] Practice management integration

Phase 3

- [ ] AI-powered treatment suggestions
- [ ] Patient progress tracking
- [ ] Automated billing codes
- [ ] Telehealth integration

Note: This project is under active development. Features and APIs may change.