🎯 CareerPilot - AI-Powered Career Path Advisor

CAREERPILOT **AI CAREER ADVISOR** STATUS **IN DEVELOPMENT**

LICENSE **MIT**

An intelligent full-stack platform that helps students and professionals discover suitable career paths through AI-powered analysis, personalized roadmaps, and weekly coaching.

Features • Tech Stack • Getting Started • API Docs • Architecture

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🚀 About

CareerPilot is a full-stack AI platform designed to solve the career guidance gap for students and early-career professionals. By analyzing skills, CVs, interests, and goals, the system generates personalized career recommendations, creates detailed learning roadmaps, and provides ongoing AI coaching.

Key Highlights

- 🤖 **AI-Powered Analysis** - Uses OpenAI GPT models to analyze CVs and recommend career paths
- 📊 **Skill Gap Analysis** - Identifies missing skills and suggests targeted learning resources
- 📖 **Personalized Roadmaps** - Generates 3-6 month step-by-step career development plans
- 💬 **Weekly AI Coaching** - Provides ongoing guidance, tasks, and feedback
- 📈 **Progress Tracking** - Visual dashboards to monitor skill development

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🎯 The Problem

Most students and early-career individuals face these challenges:

❌ **Don't know what career suits their skills** - Lack of self-awareness about strengths
❌ **Don't know which courses/certifications to take** - Overwhelmed by options

❌ **Don't understand current market demand** - Skills don't match job requirements

❌ **Don't have a mentor to guide them weekly** - No personalized feedback

Result: Confusion, wasted money on wrong courses, and delayed career growth.

✅ The Solution

CareerPilot provides an end-to-end career guidance system:

1. Intelligent Profile Creation

Users create detailed profiles including:

- Current skills and experience
- Education background
- Career interests and goals
- CV upload for automated analysis

2. AI-Powered CV Analysis

The system automatically:

- Extracts skills, tools, and experience from CVs
- Identifies strength areas and gaps
- Compares profile against market demands

3. Personalized Career Recommendations

Using AI and market data, generates:

- **Top 3-5 suitable career paths** based on current skills
- **Missing skills analysis** for each path
- **Recommended certifications** (AWS, Google, Microsoft, etc.)
- **Market demand insights** and salary ranges

4. Customized Learning Roadmaps

Creates detailed 3-6 month plans with:

- Weekly skill-building tasks
- Course recommendations (Coursera, Udemy, freeCodeCamp)
- Hands-on project ideas
- Certification preparation guides
- Interview preparation resources

5. Weekly AI Coaching

Continuous support through:

- Weekly check-ins and progress reviews
- Personalized task assignments
- Skill assessments and feedback
- Career Q&A chatbot
- Motivational guidance

✨ Features

🎯 AI-Powered Features

- ✅ CV Parsing & Skill Extraction (PDF/DOCX support)
- ✅ Natural Language Career Recommendations
- ✅ AI Chatbot Coach (GPT-4 powered)
- ✅ Personalized Upskilling Plans
- ✅ Automated Roadmap Generation
- ✅ Skill-Gap Analysis Engine

🧭 Platform Functionality

- ✅ User Authentication (JWT-based)
- ✅ Interactive User Dashboard
- ✅ Profile Management System
- ✅ CV Upload & Viewer
- ✅ Real-time AI Chat Interface
- ✅ Progress Tracking System
- ✅ Visual Roadmap Viewer

📊 Advanced Features

- ✅ Job Market Insights (Live API data)
- ✅ Course Recommendations Engine
- ✅ Skill Progress Visualization (Charts/Graphs)
- ✅ Weekly Email Coaching (Scheduled tasks)
- ✅ Community Resources Library

🛠️ Tech Stack

Frontend

- **Framework:** React 18 + Vite
- **Styling:** TailwindCSS v4
- **Routing:** React Router v7
- **Charts:** Recharts
- **Icons:** React Icons
- **HTTP Client:** Axios

Backend

- **Runtime:** Node.js 20+
- **Framework:** Express v5
- **Authentication:** JWT + bcrypt
- **AI Integration:** OpenAI API v6
- **File Processing:** Multer, pdf-parse
- **Security:** CORS, cookie-parser

Database

- **Database:** PostgreSQL
- **ORM:** Sequelize v6
- **Migrations:** Sequelize CLI

DevOps & Tools

- **Version Control:** Git
- **Package Manager:** npm
- **Environment:** dotenv
- **API Testing:** Postman/Thunder Client
- **Code Quality:** ESLint, Prettier

Deployment (Planned)

- **Frontend:** Vercel / Netlify
- **Backend:** Render / Railway
- **Database:** PostgreSQL (Supabase / Neon)

📁 Project Structure

```
CareerPilot/
|
├── backend/                 # Node.js + Express API
|   ├── src/
|   |   ├── controllers/        # Request handlers
|   |   |   ├── authController.js
|   |   |   ├── userController.js
|   |   |   ├── cvController.js
|   |   |   ├── careerController.js
|   |   |   └── chatController.js
|   |   |
|   |   ├── routes/             # API routes
|   |   |   ├── authRoutes.js
|   |   |   ├── userRoutes.js
|   |   |   ├── cvRoutes.js
|   |   |   ├── careerRoutes.js
|   |   |   └── chatRoutes.js
|   |   |
|   |   ├── models/             # Database models (Sequelize)
|   |   |   ├── User.js
|   |   |   ├── Profile.js
|   |   |   ├── CV.js
|   |   |   ├── Skill.js
|   |   |   ├── CareerPath.js
|   |   |   ├── Roadmap.js
|   |   |   └── Progress.js
|   |   |
|   |   ├── services/           # Business logic
|   |   |   ├── authService.js
|   |   |   ├── cvService.js
|   |   |   ├── careerService.js
|   |   |   └── progressService.js
|   |   |
|   |   ├── ai/                 # AI integration
|   |   |   ├── openaiClient.js
|   |   |   ├── careerAdvisor.js
```

```
│   │   │   ├── roadmapGenerator.js
│   │   │   └── chatbot.js
│   │   │
│   │   ├── cv_parser/              # CV processing
│   │   │   ├── pdfParser.js
│   │   │   ├── skillExtractor.js
│   │   │   └── experienceParser.js
│   │   │
│   │   └── utils/                  # Utilities
│   │       ├── jwtHelper.js
│   │       ├── validators.js
│   │       └── errorHandler.js
│   │
│   ├── config/
│   │   └── database.js             # DB configuration
│   │
│   ├── migrations/                 # Database migrations
│   ├── seeders/                    # Seed data
│   ├── uploads/                    # CV uploads
│   ├── tests/                      # Unit/Integration tests
│   ├── app.js                      # Express app setup
│   ├── server.js                   # Server entry point
│   ├── package.json
│   └── .env.example
│
├── frontend/                       # React + Vite
│   ├── src/
│   │   ├── components/             # Reusable components
│   │   │   ├── common/
│   │   │   │   ├── Navbar.jsx
│   │   │   │   ├── Footer.jsx
│   │   │   │   ├── Button.jsx
│   │   │   │   └── Card.jsx
│   │   │   │
│   │   │   ├── auth/
│   │   │   │   ├── LoginForm.jsx
│   │   │   │   └── RegisterForm.jsx
│   │   │   │
│   │   │   ├── dashboard/
│   │   │   │   ├── StatsCard.jsx
│   │   │   │   ├── SkillChart.jsx
│   │   │   │   └── ProgressBar.jsx
│   │   │   │
│   │   │   ├── profile/
│   │   │   │   ├── ProfileEditor.jsx
│   │   │   │   └── SkillSelector.jsx
│   │   │   │
│   │   │   ├── cv/
│   │   │   │   ├── CVUploader.jsx
│   │   │   │   └── CVViewer.jsx
│   │   │   │
│   │   │   ├── career/
```

```
│   │   │   │   ├── CareerCard.jsx
│   │   │   │   ├── RoadmapViewer.jsx
│   │   │   │   └── SkillGapChart.jsx
│   │   │   │
│   │   │   └── chat/
│   │   │       ├── ChatInterface.jsx
│   │   │       └── MessageBubble.jsx
│   │   │
│   │   ├── pages/                # Page components
│   │   │   ├── Home.jsx
│   │   │   ├── Login.jsx
│   │   │   ├── Register.jsx
│   │   │   ├── Dashboard.jsx
│   │   │   ├── Profile.jsx
│   │   │   ├── CVUpload.jsx
│   │   │   ├── CareerRecommendations.jsx
│   │   │   ├── Roadmap.jsx
│   │   │   ├── Chat.jsx
│   │   │   └── NotFound.jsx
│   │   │
│   │   ├── hooks/                # Custom React hooks
│   │   │   ├── useAuth.js
│   │   │   ├── useApi.js
│   │   │   └── useChat.js
│   │   │
│   │   ├── services/            # API services
│   │   │   ├── authService.js
│   │   │   ├── userService.js
│   │   │   ├── cvService.js
│   │   │   ├── careerService.js
│   │   │   └── chatService.js
│   │   │
│   │   ├── assets/              # Images, fonts, etc.
│   │   ├── App.jsx              # Main app component
│   │   ├── index.css            # Global styles
│   │   └── main.jsx            # Entry point
│   │
│   ├── public/
│   ├── package.json
│   ├── vite.config.js
│   ├── tailwind.config.js
│   └── postcss.config.js
│
├── docs/                       # Documentation
│   ├── API_DOCS.md             # API endpoints
│   ├── DATABASE.md             # Database schema
│   ├── ARCHITECTURE.md         # System design
│   └── ROADMAP.md              # Development plan
│
└── README.md                   # This file
```

🚀 Getting Started

Prerequisites

Ensure you have the following installed:

- **Node.js** 20+ ([Download](#))
- **PostgreSQL** 15+ ([Download](#))
- **npm** or **yarn**
- **Git**

Installation

1. Clone the Repository

```
git clone https://github.com/yourusername/careerpilot.git
cd careerpilot
```

2. Backend Setup

```
# Navigate to backend
cd backend

# Install dependencies
npm install

# Create environment file
cp .env.example .env

# Edit .env with your credentials
# - Add PostgreSQL connection details
# - Add OpenAI API key
# - Set JWT secret

# Run database migrations
npx sequelize-cli db:migrate

# (Optional) Seed database
npx sequelize-cli db:seed:all

# Start development server
npm run dev
```

Backend runs on `http://localhost:5000`

3. Frontend Setup

```
# Navigate to frontend (from root)
cd frontend

# Install dependencies
```

```
npm install

# Create environment file
cp .env.example .env

# Edit .env with backend API URL

# Start development server
npm run dev
```

Frontend runs on `http://localhost:5173`

🔐 Environment Variables

Backend `.env`

```
# Server Configuration
PORT=5000
NODE_ENV=development

# Database Configuration
DB_HOST=localhost
DB_PORT=5432
DB_NAME=careerpilot_db
DB_USER=postgres
DB_PASSWORD=your_password

# JWT Configuration
JWT_SECRET=your_super_secret_key_change_this
JWT_EXPIRES_IN=7d

# OpenAI Configuration
OPENAI_API_KEY=sk-your-openai-api-key-here
OPENAI_MODEL=gpt-4o-mini

# CORS Configuration
FRONTEND_URL=http://localhost:5173

# File Upload
MAX_FILE_SIZE=5242880
UPLOAD_DIR=./uploads
```

Frontend `.env`

```
# API Configuration
VITE_API_URL=http://localhost:5000/api
VITE_API_TIMEOUT=30000

# App Configuration
```

```
VITE_APP_NAME=CareerPilot
VITE_MAX_UPLOAD_SIZE=5
```

📊 API Documentation

Detailed API documentation is available in `docs/API_DOCS.md`

Quick Overview

Endpoint	Method	Description
`/api/auth/register`	POST	User registration
`/api/auth/login`	POST	User login
`/api/user/profile`	GET	Get user profile
`/api/cv/upload`	POST	Upload CV
`/api/cv/parse`	POST	Parse CV & extract skills
`/api/career/recommend`	POST	Get career recommendations
`/api/career/roadmap`	POST	Generate learning roadmap
`/api/chat/message`	POST	Send message to AI coach
`/api/progress/track`	POST	Update progress

🗄 Database Schema

Full database documentation in `docs/DATABASE.md`

Core Tables

- **users** - User accounts and authentication
- **profiles** - User profile details (skills, education, goals)
- **cvs** - Uploaded CV files and metadata
- **skills** - Skills extracted from CVs and profiles
- **career_paths** - Available career paths and requirements
- **roadmaps** - Generated learning roadmaps
- **progress** - User progress tracking
- **chat_messages** - AI coaching conversations

🏗 Architecture

System architecture details in `docs/ARCHITECTURE.md`

High-Level Overview

```
┌─────────────────┐
│  React Frontend │ ──────> User Interface
```

```
         │
         │  HTTPS/REST
         ▼
┌─────────────┐
│  Express API │  ──────────> Authentication, Business Logic
└─────────────┘
         │
    ┌────┴────────┬───────────┬──────────┐
    ▼             ▼           ▼          ▼
┌────────┐  ┌────────┐  ┌──────────┐  ┌───────┐
│Postgres│  │OpenAI │  │CV Parser│  │Cache  │
└────────┘  └────────┘  └──────────┘  └───────┘
```
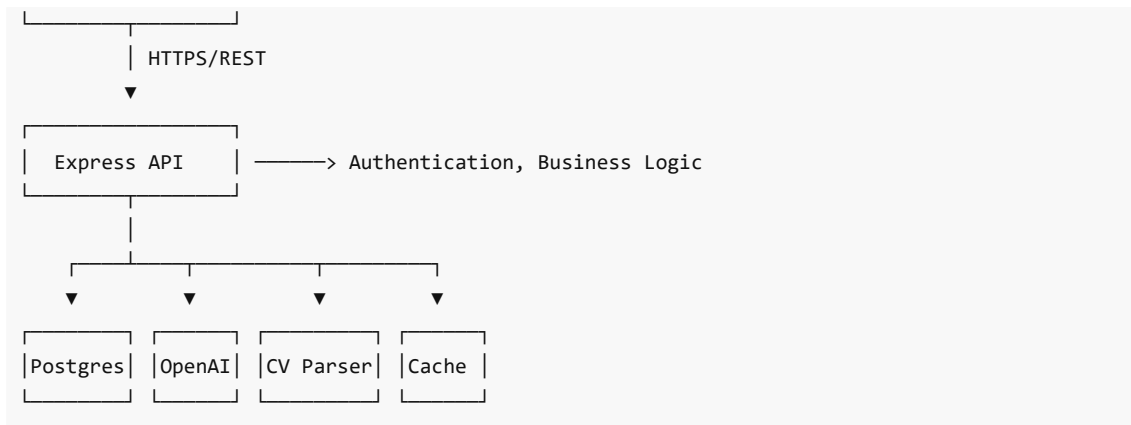
📅 Development Roadmap

Full 4-week development plan in `docs/ROADMAP.md`

Phase 1 - Foundation (Week 1)

- ✅ Project setup & folder structure
- ✅ Database schema design
- ⏳ Authentication system
- ⏳ Basic frontend layout

Phase 2 - Core Features (Week 2)

- ⏳ CV upload & parsing
- ⏳ User profile management
- ⏳ OpenAI integration
- ⏳ Career recommendation engine

Phase 3 - AI Features (Week 3)

- ⏳ Roadmap generation
- ⏳ Chatbot implementation
- ⏳ Skill gap analysis
- ⏳ Progress tracking

Phase 4 - Polish & Deploy (Week 4)

- ⏳ UI/UX improvements
- ⏳ Testing & bug fixes
- ⏳ Documentation
- ⏳ Deployment

🧪 Testing

```
# Backend tests
cd backend
npm test

# Frontend tests
```

```
cd frontend
npm test

# Run all tests
npm run test:all
```

🤝 Contributing

Contributions are welcome! Please follow these steps:

1. Fork the repository
2. Create a 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.

👤 Author

Your Name

- GitHub: @yourusername
- LinkedIn: your-profile
- Email: your.email@example.com

🙏 Acknowledgments

- OpenAI for GPT API
- Sequelize ORM team
- React & Vite communities
- TailwindCSS team
- All open-source contributors

📞 Support

For support, email support@careerpilot.com or open an issue in this repository.

Built with ❤️ for helping people find their dream careers

⭐ Star this repo if you find it helpful!