AI-Powered Task Allocation Agent: NeurAllocate

REVOLUTIONIZING WORKFORCE EFFICIENCY WITH COGNITIVE AI

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Problem Statement

- Issue: Inefficient task allocation leads to productivity loss and team burnout.
- Traditional Approaches:
- Basic skill and availability matching.
- No real-time cognitive or sentiment-based decision-making.
- Goal: AI-driven system that assigns tasks based on cognitive load, behavior, and availability.

Our Solution – NeurAllocate

- AI-powered task optimizer using:
- Neuro-Behavioral AI Matching (NBM)
- Adaptive Expertise Evolution (AEE)
- Dynamic Availability Intelligence (DAI)
- Sentiment-Based Task Assignment (SBA)

Key Features

- AI-Driven Task Matching
- Cognitive Load Analysis
- Team Performance Analytics
- Real-Time Collaboration
- Automated Skill Tracking
- Sentiment & Mood Detection
- Conflict Resolution Assistance

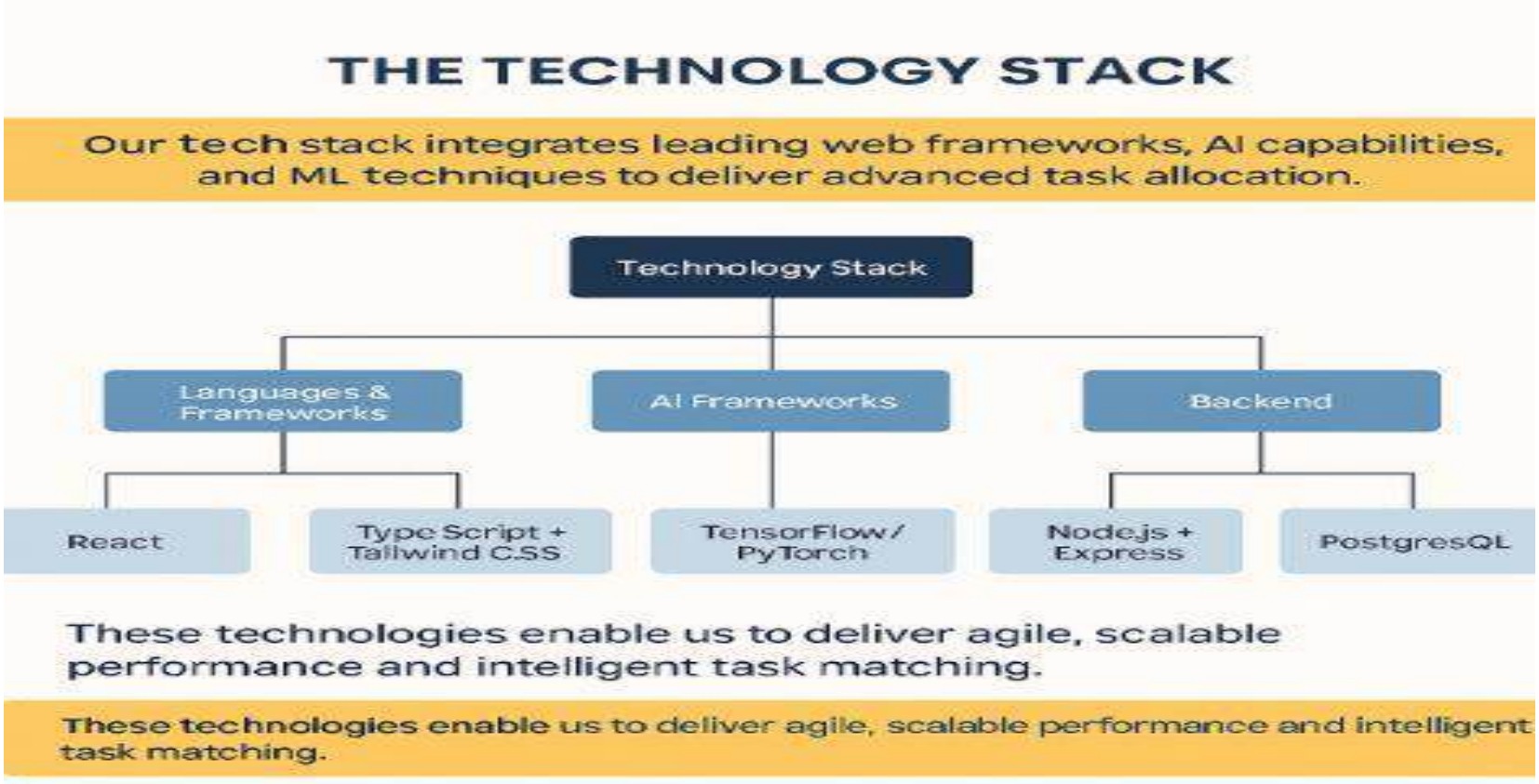
How It Works

- 1. User Inputs: Skills, availability, preferences
- 2. AI Processing: Behavior, sentiment, performance analysis
- 3. Task Allocation: Optimal assignments
- 4. Continuous Learning: Dynamic profile updates

Technology Stack

- Frontend: React, TypeScript, TailwindCSS, Shadcn/ui
- Backend: Express.js, Node.js, TypeScript
- Database: PostgreSQL (Drizzle ORM)
- AI: OpenAI, Claude, GNNs, Reinforcement Learning
- Auth: PassportJS
- Hosting: Vercel (Frontend), Azure (Backend)

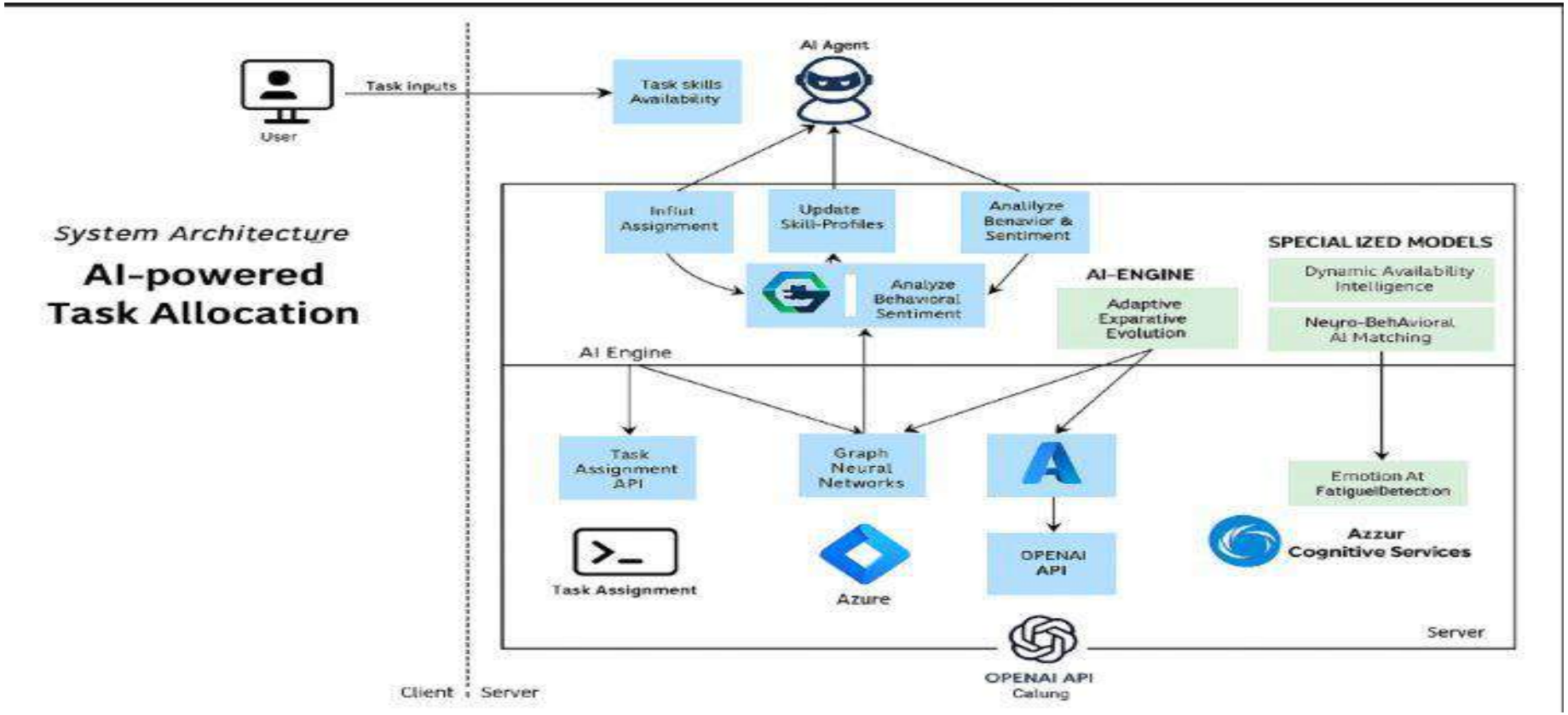
TECH STACK FLOW CHART



System Architecture

- Frontend ↔ Backend API ↔ Database
- AI Engine with GNNs and RL
- Real-time sentiment & availability tracking
- Azure Cognitive Services integration

System Architecture



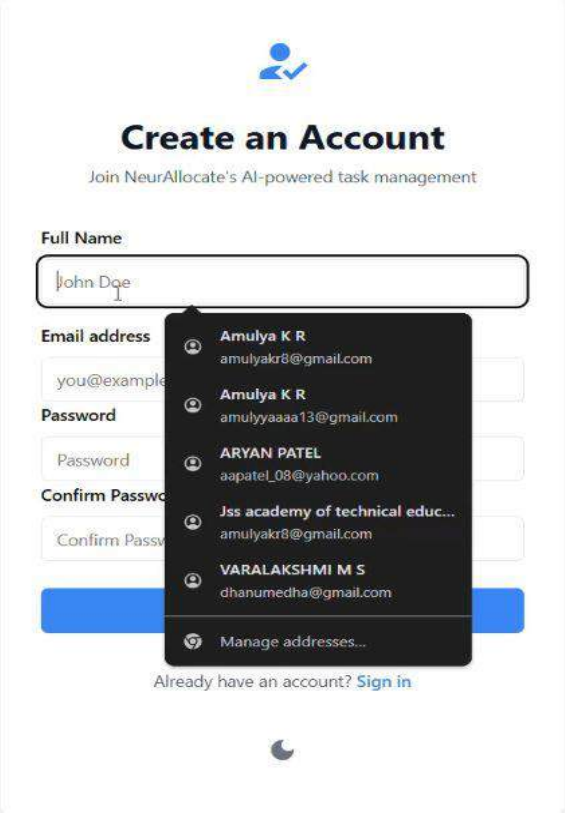
Implementation Process

- 1. Setup: Clone repo, configure DB, install dependencies
- 2. AI Integration: Train behavioral models
- 3. Development: Build frontend & backend
- 4. Testing: Real-world performance tests & optimization

Demo Showcase

- • Task Dashboard
- • AI Assignment System
- • Real-time Sentiment UI

Demo Showcase



Expected Outcomes

- Optimized Task Assignments
- AI-Driven Decision Making
- Adaptive Learning & Upskilling
- Enterprise Scalability
- Higher Satisfaction & Productivity

Challenges & Solutions

- Real-time Sentiment Analysis → Azure Emotion AI
- Load Balancing → Predictive AI Models
- Scaling → Azure Cloud Infrastructure
- Behavioral Data → Continuous User Feedback

Future Scope

- Deep Learning-based Personalization
- Biometric Fatigue Detection
- Enterprise Integration
- Mobile App & API Development

Conclusion

- NeurAllocate = AI + Behavior + Efficiency
- Adaptive Expertise Evolution
- Smart, Real-Time Task Assignment
- Boosted Productivity & Reduced Burnout

Thank You

- Team NeurAllocate
- Q&A Session