



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

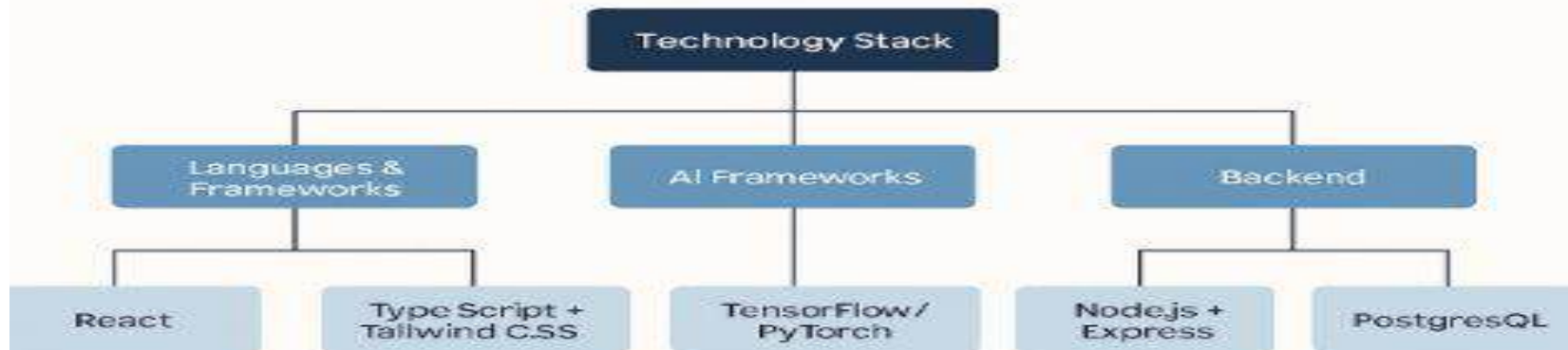
Technology Stack

- ▶ 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

THE TECHNOLOGY STACK

Our tech stack integrates leading web frameworks, AI capabilities, and ML techniques to deliver advanced task allocation.



These technologies enable us to deliver agile, scalable performance and intelligent task matching.

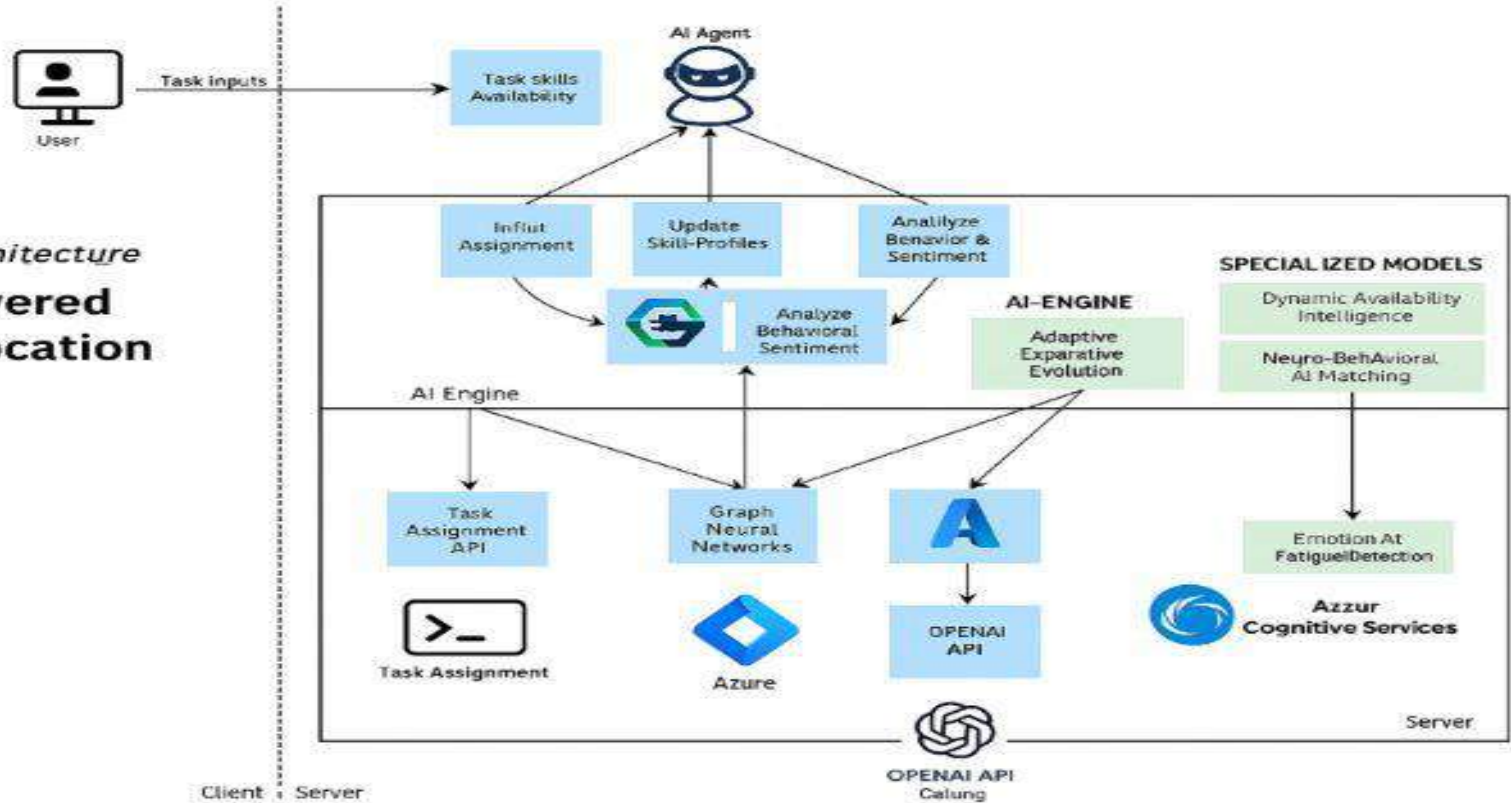
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System Architecture

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

System Architecture

System Architecture AI-powered Task Allocation




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



Create an Account

Join NeurAllocate's AI-powered task management

Full Name






Email address

Password

Confirm Password

[Manage addresses...](#)

Already have an account? [Sign in](#)

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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