# **StudyBuddy - Full-Stack Peer-to-Peer Academic Help Platform**

## **Overview**

**StudyBuddy** is a full-stack web application that allows students to request and offer academic help in a structured, interactive, and reputation-based environment. It aims to bridge the academic support gap between struggling students and experienced peers who enjoy teaching and sharing knowledge.

The platform fosters collaborative learning through a question-answer system where students can post their questions, receive written or live help from peers, and provide feedback to improve response quality. Helpers can build their public profile, gain reputation points, and receive badges for their contributions.

This app is designed to be scalable, modular, accessible, and easy to maintain. Built using **Next.js (App Router)**, **Tailwind CSS**, **Firebase**, and a future-ready **Node.js backend**, StudyBuddy is structured to support real-time interactions, AI integrations, and professional team workflows.

## **Key Features**

### **For Help Seekers**

* Submit questions anonymously or with name
* Attach files (images, PDFs, etc.)
* Choose help type: written answer or live session
* Rate responses ("helped me / not helpful" + comments)
* Bookmark answers for later
* Receive AI suggestions for clearer question writing
* Use AI to summarize or rephrase explanations

### **For Helpers**

* View filtered list of open questions (by topic, urgency)
* Choose preferred topics and availability
* Respond with text, video, or voice (future extension)
* Track personal contributions, badges, and rating
* Get AI feedback on explanation quality
* Build a public helper profile with stats and achievements

### **General**

* Firebase Authentication (Google & Email support)
* Firestore for real-time question/answer data
* AI modules for clarification, translation, summarization
* Context-based state management
* Modular design: features are fully separated
* Responsive UI using Tailwind CSS
* SEO-optimized with Next.js 14 (App Router)

## **Use Cases**

### **1. Jonathan - The Help Seeker**

Jonathan is a first-year student struggling with Linear Algebra. He logs into StudyBuddy, submits a question anonymously, uploads a photo of the problem, and requests a written answer. A helper responds with a step-by-step breakdown. Jonathan marks it as helpful, saves it to his study folder, and uses the AI tool to generate a quiz based on the answer.

### **2. Elix - The Peer Helper**

Elix is a senior computer science student. He logs in, filters questions in his areas of expertise, and selects a high-urgency question from Jonathan. He replies with a detailed written explanation. The AI suggests a clearer rephrase which he accepts. Later, his profile updates with a new badge for "Top Helper - Math" and his response gets rated highly.

## **Tech Stack**

| **Category** | **Technology** |
| --- | --- |
| Frontend | Next.js 14 (App Router) |
| Styling | Tailwind CSS |
| Authentication | Firebase Auth (Google, Email) |
| Database | Firebase Firestore (NoSQL, realtime) |
| Hosting | Vercel / Firebase Hosting |
| State Management | React Context API |
| Version Control | Git + GitHub (team-based) |
| Backend (Optional) | Node.js + Express |
| AI Integration | OpenAI API, Langchain, custom LLM agents |

## **Team Collaboration Plan**

* Team of 6 developers split across front-end features and back-end logic
* Each feature lives in a self-contained folder (Ask, Requests, Profile)
* Common UI components live under /components/common
* Shared layout (Navbar, Context Providers) under /components/layout
* GitHub used with branches per task + Pull Request reviews
* GitHub Projects or Trello used for task tracking

## **Deployment Plan**

* **Frontend** deployed on Vercel with CI/CD from GitHub
* **Firebase** handles Auth and Firestore
* **Optional Backend** hosted on Render, Railway, or Firebase Functions
* .env.local and .env used for environment configuration

## **AI Integration Plan**

* Use OpenAI API to:  
  + Suggest improved question phrasing
  + Summarize or explain answers more clearly
  + Translate between Hebrew and English
  + Detect toxic content or copy-paste behavior
* Each AI logic module separated into a /services/aiService.js
* Admin panel (future) can monitor flagged responses

## **Future Enhancements**

* WebRTC live help sessions
* Gamification leaderboard and ranks
* Notification system (email or in-app)
* Admin dashboard with moderation tools
* AI tutor bots for instant feedback
* Multi-language UI: Arabic, Hebrew, English

This document represents the full structure, use cases, stack, and architecture of StudyBuddy. All team members should align development with this plan. Firebase and AI integration will be rolled out iteratively and cleanly modularized for production-level maintainability.

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# **Homepage (/) – Rich, Interactive Welcome Portal**

### **Fully Expanded — What it shows:**

* **Navigation Bar**
  + StudyBuddy logo
  + Links: Home, Ask, Requests, Profile, About
  + Sign In / Register buttons
  + (If signed in) Avatar menu with "My Questions", "Logout"
* **Hero Section**
  + Tagline + CTA (“Ask, Help, Grow — Together”)
  + 2 Buttons: [Start Asking] + [Browse Requests]
  + Background illustration or animation
  + (Optional) AI-powered onboarding prompt: “What subject do you need help in today?”
* **Live Preview Tiles** *(dynamic preview cards)*
  + “Latest Questions”
  + “Top Helpers”
  + “Featured Subjects”
* **About Section**
  + Student quotes
  + StudyBuddy's mission
  + Carousel of success stories
* **Features Grid**
  + 6 cards: Ask Help | Help Others | Earn Badges | Track Progress | Use AI | Build Portfolio
* **How It Works**
  + Visual Stepper (Ask → Help → Track → Grow)
  + Demo video
* **Community Snapshot Panel**
  + **of users helped**
  + **of questions asked this week**
  + Trending topics (chips)
* **Footer**
  + Quick links (Docs, Contact, Terms)
  + Socials
  + Language selector

# **Ask Page (/ask) – The Most Feature-Rich Page**

### **Fully Expanded — What it shows:**

* **Page Title**
  + “Ask a Question”
  + Subtitle: “Be clear. Be specific. We’ll help.”
* **Title Input**
  + input[type="text"]
  + Character counter
  + Tooltip: “Avoid vague titles like ‘Help me please’”
* **"Rephrase with AI" Button**
  + Live AI rewrite with loading spinner
  + Toggle to auto-insert rephrased version
* **AI Quality Meter**
  + “Clarity score: 8/10” with smiley/frown emoji
  + Tips to improve question
* **Description Textarea**
  + Multiline input with formatting toolbar
  + Rich text support (bold, italic, lists, code block)
  + Markdown preview toggle
  + (Future) AI-generated summary
* **File Upload**
  + Drag & drop box or file input
  + Accepts images, PDFs, .txt, .docx
  + File preview thumbnails
* **Code Snippet Box**
  + Optional: “Add code” button opens a code editor field (language selector, syntax highlighting)
* **Tags/Subject Selector**
  + Dropdown: Math, Physics, CS, etc.
  + Ability to type custom tags
  + “+ Add multiple”
* **Public / Private Toggle**
  + Choose who can view the question
  + Tooltip: “Private questions are only visible to tutors or moderators”
* **Submit Button**
  + Styled button + hover state
  + Disables if required fields are empty
  + Shows loading and success toast
* **Sidebar**
  + “Tips for Better Questions” panel
  + “Recent similar questions”
  + “Most common tags today”

# **Requests Page (/requests) – Knowledge Hub**

### **Fully Expanded — What it shows:**

* **Header**
  + Title: “Help Requests”
  + Subtitle: “Browse, filter, and contribute”
* **Search Bar**
  + Live keyword search
  + AI auto-suggest: “Did you mean matrix inversion?”
* **Filters Panel**
  + Subject tag filter (Math, CS, Physics, etc.)
  + Time filters (Last 24h, 7d)
  + Sort options (Newest, Most Answered, Unanswered)
  + Difficulty level (Beginner, Intermediate, Advanced)
* **List/Grid of Request Cards** Each card shows:  
  + Title
  + Description preview
  + Time ago
  + Author
  + Tag chips
  + Answers count
  + Action: “View”, “Help”, “Bookmark”
* **Side Panel**
  + Popular tags
  + Top contributors
  + Ask a question CTA
* **Pagination or Infinite Scroll**
  + “Load more” button
  + Scroll to auto-load next set
* **Empty State Message**
  + If no questions match filters: “Try a different keyword”

# **Request Detail Page (/requests/[id]) – Deep Dive View**

### **Fully Expanded — What it shows:**

* **Back to Requests link**
* **Question Overview**
  + Title (Large font)
  + Subject tag, time, author info
  + Upvote / Save icons
  + Bookmark and Share buttons
* **Full Description**
  + Renders formatting
  + Attached files (images, PDFs, code)
  + (Optional) AI summary preview
* **Answer Section**
  + “Answers (3)” heading
  + Each answer block:  
    - Answerer's name & badge
    - Answer content
    - Upvote / Mark as Helpful
    - Comment button
  + Add new answer form
* **“I Can Help” Button**
  + Triggers reply form or confirmation dialog
* **Sidebar (Sticky)**
  + Related questions
  + Ask a new question button
  + AI: “Suggested improvements to this question”

# **Profile Page (/profile) – Academic Dashboard**

### **Fully Expanded — What it shows:**

* **User Banner**
  + Name, email, join date, avatar
  + Edit profile button
  + Upload profile photo
* **Badges Section**
  + Earned badges with color themes
  + Hover to see description
  + Locked badges in gray
* **Stats Overview**
  + Total questions asked
  + Questions answered
  + Upvotes earned
  + Average answer rating
  + Rank or leaderboard position
* **Recent Activity Feed**
  + Timeline of recent actions
  + “Answered: How to use Merge Sort”
  + “Asked: Why does friction cause heat?”
* **Tabs**
  + My Questions (list of posted questions)
  + My Answers (list of contributions)
  + Saved Questions (bookmarks)
* **Account Management Section**
  + Change password
  + Logout
  + Delete account (danger zone)
  + Notification preferences
* **Social/Academic Links**
  + Link GitHub / LinkedIn
  + Add student ID or university