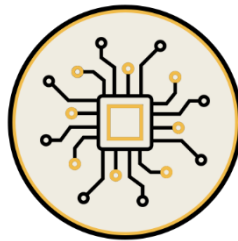


AN-NAJAH NATIONAL UNIVERSITY



Computer Engineering Department

## Software Graduation Project



PC Builder

Students

Osaid Islam Raddad and Omar Maher Khatib

Under the supervision of  
Dr. Amjad Abu Hassan

A report submitted in partial fulfillment of the requirements for  
bachelor's degree in computer engineering in the Faculty of Engineering  
Information Technology - Software Project

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## **Disclaimer**

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## **Abstract**

The PC Builder Platform is a full-stack web application designed to simplify and enhance the experience of building custom PCs. It addresses challenges such as hardware compatibility, performance optimization, power calculation, and component selection, helping both novices and experienced builders avoid errors and make informed decisions.

The platform features an Intelligent PC Builder with real-time compatibility checks, an AI-Powered Hardware Calculator for optimized configurations, 3D Component Visualization using Three.js, Real-Time Chat & Community for interaction, a Tech Support System for personalized guidance, a Hardware Comparison Tool, Build Showcase & Sharing, an Advanced Admin Dashboard, an AI Chatbot Assistant, and Educational Resources covering tutorials, guides, and even quantum computing content.

Built with React 18.3, TailwindCSS, PrimeReact, SignalR, Three.js, and ASP.NET Core with SQL Server, the platform integrates advanced algorithms for compatibility validation, performance calculation, and interactive 3D visualization, ensuring a seamless, real-time user experience.

Supporting multiple roles Regular Users, Tech Support and Administrators the platform serves PC enthusiasts, first-time builders, gamers, content creators, IT professionals, and hardware retailers. Users benefit from reduced errors, cost savings, expert guidance, and time-efficient planning, while the industry gains improved customer satisfaction and insights.

Innovations include real-time compatibility validation, AI recommendations, immersive 3D visualization, integrated communication, and educational content. Future enhancements include e-commerce integration, mobile apps, VR/AR previews, advanced ML models, benchmarking, multi-language support, and build templates.

The PC Builder Platform demonstrates full-stack expertise in modern web development, real-time systems, 3D graphics, and intelligent algorithm design, offering a comprehensive solution for custom PC building.

# Chapter 1 — Introduction

## 1.1 Background

The **PC Builder Platform** is a modern full-stack web application designed to simplify the process of building custom personal computers. With the rapid growth of PC gaming, content creation, and professional workstation demands, building a PC has become both increasingly popular and complex. Users often face challenges in selecting compatible components, estimating power requirements, avoiding performance bottlenecks, and visualizing their builds. Traditional PC building methods rely heavily on manual research, leading to inefficiencies, errors, and frustration for both beginners and enthusiasts.

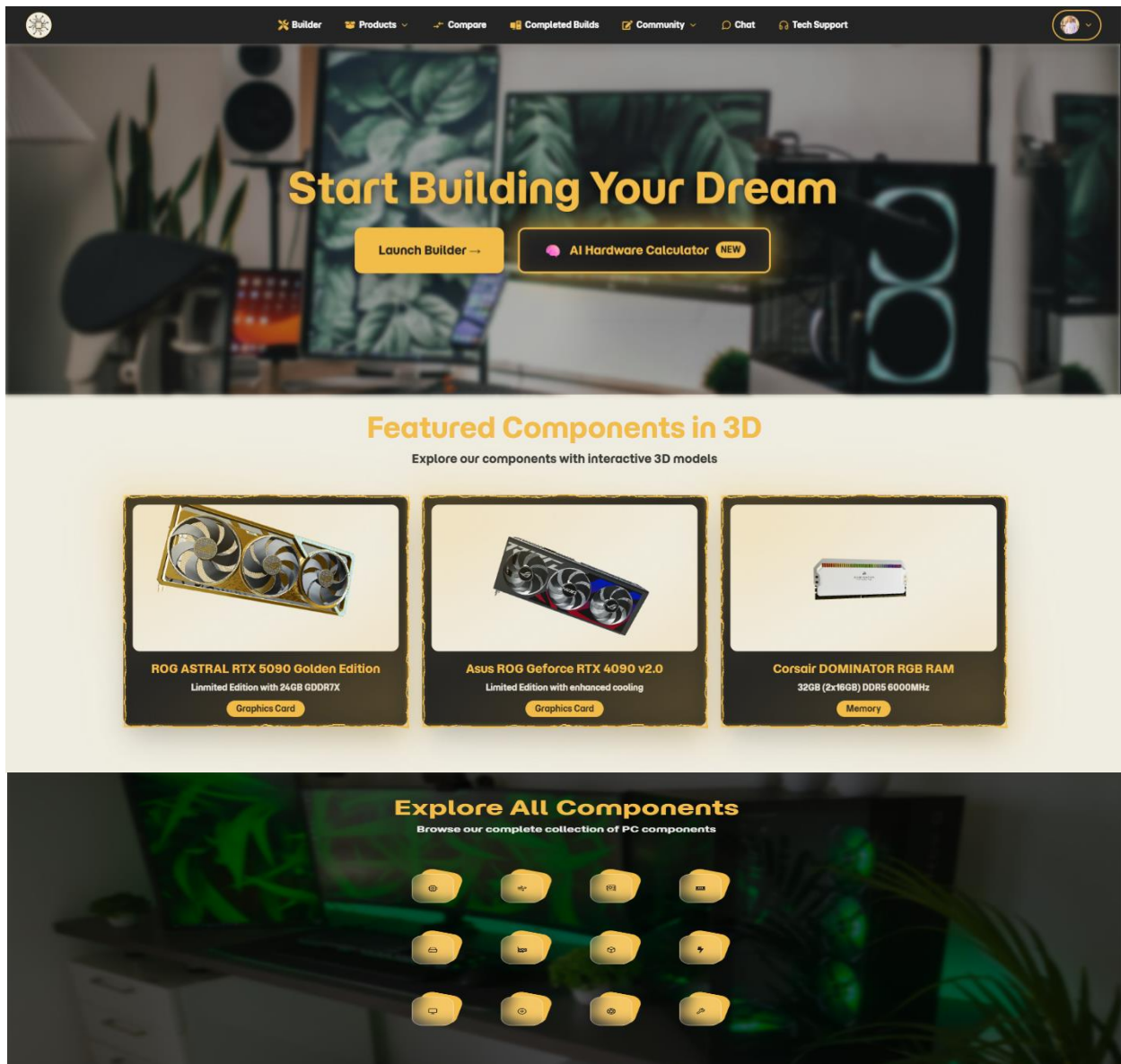


Figure 1-1 Home Page



Figure 1-2 Mobile Home Page

## 1.2 Objectives

The primary aim of this project is to provide a comprehensive solution that guides users through every step of the PC building process. Key objectives include:

- **Intelligent Component Selection:** Real-time compatibility validation to prevent mismatched components.
- **AI-Powered Recommendations:** Suggest optimal hardware configurations based on user requirements, budget, and intended use.
- **3D Visualization:** Enable users to visualize their PC builds interactively before purchasing.
- **Community Engagement:** Facilitate real-time chat, build sharing, Posts, and tech support.
- **Educational Support:** Provide guides, tutorials, and knowledge resources to empower users with hardware insights.

## 1.3 Significance

The platform addresses the increasing market demand for personalized computing solutions. With the global PC gaming and content creation markets growing rapidly, users require tools that simplify complex decisions, optimize performance, and reduce errors. By integrating AI recommendations, compatibility checks, and community support, the platform enhances user confidence, reduces wasted resources, and promotes informed purchasing decisions.

Additionally, it provides opportunities for tech support professionals and hardware retailers to connect with users, fostering a robust PC building ecosystem.

## 1.4 Organization Of The Report

This report is organized into the following chapters:

1. **Introduction** – Provides background, objectives, significance, and structure of the report.
2. **System Design and Architecture** – Describes the platform's frontend and backend architecture, key components, and workflows.
3. **Features and Functionalities** – Details core features including PC builder, compatibility system, AI calculator, 3D visualization, chat, build showcase, and admin dashboard.
4. **Implementation** – Explains technologies used, code structure, and integration between frontend and backend.
5. **Testing and Quality Assurance** – Covers testing strategies, tools, and validation of functionalities.
6. **Deployment** – Describes deployment process for frontend and backend, and environment configuration.
7. **Conclusion and Future Work** – Summarizes achievements and outlines potential enhancements.

## Chapter 2 — Theoretical Background & Previous Work

### 2.1 Background on Custom PC Building

Building a personal computer involves selecting compatible hardware components, assembling them, and ensuring optimal performance for the intended use, such as gaming, content creation, or professional workloads. Key challenges in custom PC building include:

- **Compatibility Issues:** Components like CPUs, motherboards, RAM, and GPUs must match in terms of socket types, memory type, power requirements, and physical dimensions.
- **Performance Optimization:** Users need to avoid bottlenecks between CPU, GPU, and memory to achieve maximum efficiency.
- **Cost and Budget Management:** Balancing performance requirements against budget limitations is often complex.
- **Knowledge Gap:** Beginners may struggle with understanding specifications, installation processes, and troubleshooting.

Historically, users relied on forums, manufacturer guides, and trial-and-error methods to build PCs, which were time-consuming and prone to errors.

## 2.2 The Role of Full-Stack Web Applications in PC Building

With the advancement of web technologies, modern platforms provide interactive, real-time solutions for PC building. Full-stack web applications combine:

- **Frontend Interfaces:** Interactive UIs using frameworks like React allow users to visualize builds, compare components, and receive real-time feedback.
- **Backend Systems:** Server-side frameworks like ASP.NET Core manage databases, API endpoints, authentication, and business logic.
- **Real-Time Communication:** Technologies like SignalR enable instant messaging between users, support services, and notifications.
- **Data Visualization:** Libraries like Three.js and Chart.js provide 3D modeling and performance analysis for better decision-making.

These systems reduce user errors, save time, and make PC building more accessible to novices and experts.

## 2.3 Previous Work and Existing Platforms

Several platforms have previously attempted to simplify PC building:

- **PCPartPicker:** Offers component compatibility checking and price comparison. Lacks real-time AI recommendations and 3D visualization.
- **BuildMyPC:** Provides component selection and performance estimates but limited community interaction.
- **Newegg / Amazon Build Guides:** Retail-based build planners, often with static recommendations and no intelligent compatibility analysis.

**PC Builder Platform** differentiates itself by combining:

- **AI-Powered Recommendations:** Suggesting optimal builds based on budget, use case, and future-proofing.
- **Real-Time Compatibility Validation:** Preventing mismatched components instantly.
- **3D Visualization:** Interactive 360° component models.
- **Community Features:** Real-time chat, build showcase, Posts, and tech support integration.

These features bridge the gap between traditional static build planners and intelligent, user-friendly platforms.

## 2.4 Technical Concepts

Several theoretical concepts underpin the development of the platform:

1. **Component Compatibility Algorithms**
  - Ensures CPU socket matches motherboard
  - Validates RAM type and capacity
  - Checks GPU clearance and PSU adequacy
2. **AI Recommendation Systems**
  - Uses user inputs (budget, use-case) to suggest optimal builds
  - Considers performance, cost, and future-proofing
3. **3D Rendering and Visualization**
  - WebGL-based rendering using Three.js and React Three Fiber
  - Provides interactive models of PC components
4. **Real-Time Communication Protocols**
  - WebSockets via SignalR for instant chat
  - Maintains message history and online presence indicators

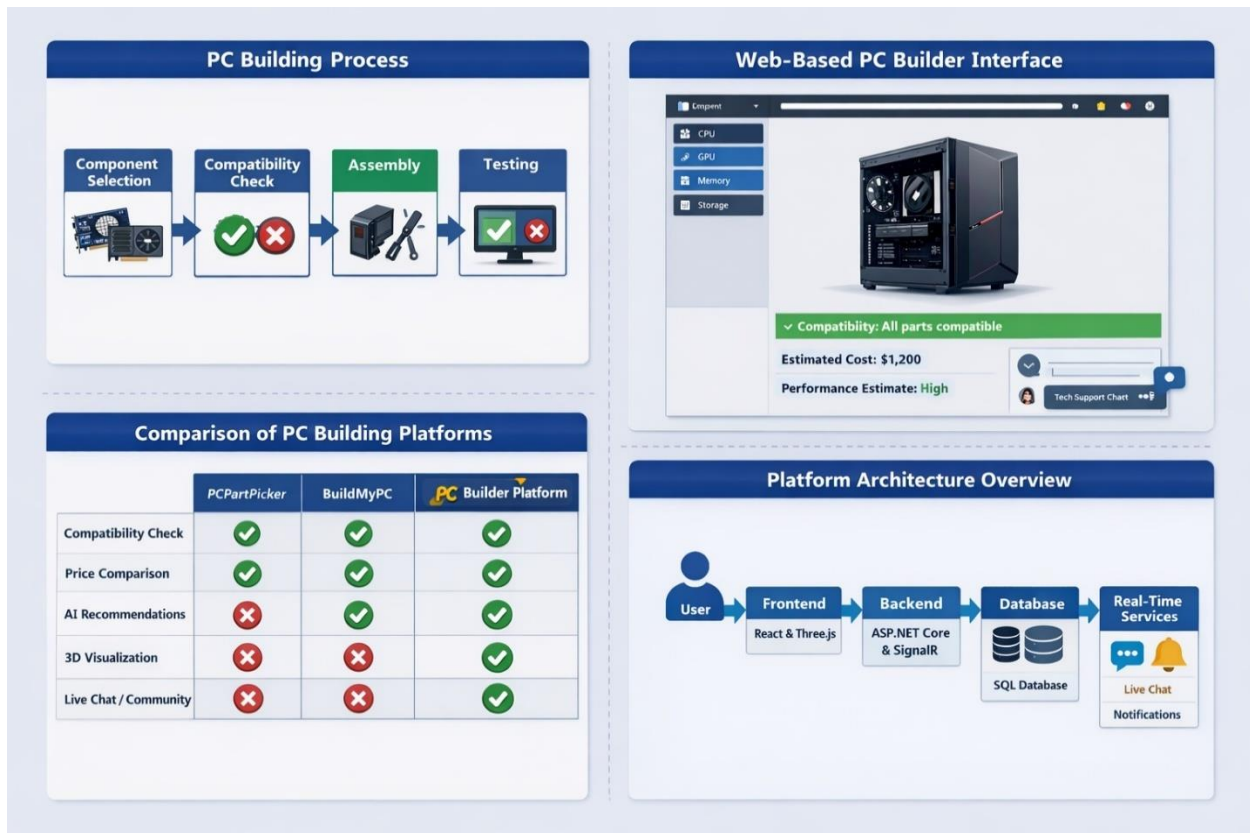


Figure 2-1 Flowchart showing platform architecture: User → Frontend → Backend → Database → Real-Time Services.

## 2.5 Summary

Theoretical foundations in PC hardware, web-based visualization, AI recommendation systems, and real-time communication are crucial for developing a modern PC building platform. Previous tools addressed parts of the workflow, but none provided an end-to-end solution combining intelligent suggestions, interactive 3D visualization, and community-driven support. The PC Builder Platform fills this gap, offering a comprehensive, user-friendly, and scalable solution.

## Chapter 3 — Methodology

This chapter documents the materials, standards, procedures, and safety practices used to build the Hall Guide Robot so that an experienced practitioner can reproduce the system and obtain comparable results.

### 3.1 Standards and Specifications (Codes)

The design and implementation of the **PC Builder Platform** adhere to several industry and engineering standards to ensure functionality, security, and user experience:

1. **Web Standards:**
  - HTML5, CSS3, and ECMAScript 2021 standards are followed for frontend development to ensure cross-browser compatibility and responsiveness.
  - **Accessibility** standards (WCAG 2.1) are applied to guarantee that the platform is usable by people with disabilities.
2. **Backend and API Standards:**
  - RESTful API design principles and **JSON** formatting standards are applied for API consistency.
  - **JWT (JSON Web Token)** authentication follows RFC 7519 standard for secure token-based user authentication.
  - **SignalR** real-time communication follows ASP.NET Core SignalR protocols for WebSocket connections.
3. **Database Standards:**
  - **SQL Server 2019** standards are used for relational data storage with normalized tables, foreign key constraints, and indexing to optimize queries.
  - Transactions and referential integrity are enforced to ensure consistent and reliable data handling.
4. **Software Development Best Practices:**
  - Code style and linting are enforced using **ESLint** for frontend and **.NET Core coding guidelines** for backend.

- Version control using **Git** with branching strategies (frontend-dev, backend-dev, main) to manage collaborative development.
5. **Security Standards:**
- Input validation and parameterized queries are applied to prevent **SQL injection**.
  - HTTPS enforcement, CORS configuration, and secure token handling follow OWASP security recommendations.

#### **Design Alternatives Considered:**

- Alternative frontend frameworks (Vue.js, Angular) were considered, but React 18.3 was chosen for its ecosystem support and Three.js integration.
- For real-time chat, alternatives like Socket.IO were reviewed; SignalR was selected for seamless integration with ASP.NET Core.

### **3.2 Constraints**

The platform design and implementation considered several constraints in terms of economy, environment, society, ethics, and health/safety:

1. **Economy:**
  - The platform must remain cost-effective for deployment and maintenance.
  - Open-source libraries and frameworks are leveraged (React, TailwindCSS, Three.js) to reduce licensing costs.
2. **Environment:**
  - Power consumption is optimized on the server side via efficient API calls and caching.
  - Minimalistic frontend design ensures low network overhead and reduced client energy consumption.
3. **Society:**
  - Supports community-building through user interactions, chat, Posts, and shared builds.
  - Ensures data privacy by complying with secure authentication and personal data handling practices.
4. **Politics and Ethics:**
  - Platform design promotes inclusivity and avoids bias in AI recommendations.
  - Intellectual property and licensing rules are respected for all software and media used.
5. **Health and Safety:**
  - Users are guided through PC assembly safely with digital visualizations and warnings about component compatibility.
  - No physical hazards exist from platform usage, but safety information is provided when discussing hardware assembly.
6. **Manufacturability:**
  - The software is deployable using standard hosting platforms (Azure App Service, Netlify).

- Backend and frontend components are modular to allow updates or replacement without full system redesign.
- 7. **Sustainability:**
  - The design is scalable to support a growing user base.
  - Modular architecture allows easy addition of new hardware categories or AI features.
  - Future-proofing is achieved by integrating version-controlled dependency management and continuous integration pipelines.

## **Chapter 4 — Results and Analysis**

### **4.1 Introduction**

The collected data during the development and testing of the PC Builder Platform was carefully analyzed to evaluate the performance, usability, and effectiveness of the system. All results presented here reflect the outcomes obtained after implementing the full-stack features, including the PC builder interface, 3D visualization, AI-powered hardware recommendations, performance calculator, real-time chat, and admin dashboard analytics.

The analysis is presented in both tabular and graphical formats to clearly illustrate the system's capabilities and the impact of its core functionalities. All measurements and results were validated through repeated testing to ensure accuracy and reliability.

### **4.2 Data Summary**

The dataset includes information on component selection, compatibility validation, build costs, performance estimation, and user interactions within the platform. The data was organized to highlight the effectiveness of the automated compatibility checking and AI recommendation systems.

← Back Choose CPU

Search CPUs...

50 CPUs found

**Filters** Reset

Price

\$20 \$2000

Manufacturer

Intel

AMD

Rating

★★★★★ & Up

★★★★☆ & Up

★★★☆☆ & Up

★★☆☆☆ & Up

★☆☆☆☆ & Up

Core Count


4 Cores

6 Cores

8 Cores

10 Cores

Intel




**Core i5-13600K**

Cores:	14
Threads:	20
Base Clock:	3.5 GHz
Boost Clock:	5.1 GHz
TDP:	125W
Socket:	LGA1700

**\$319** Select Details

Intel




**Core i7-13700K**

Cores:	16
Threads:	24
Base Clock:	3.4 GHz
Boost Clock:	5.4 GHz
TDP:	125W
Socket:	LGA1700

**\$419** Select Details

AMD



**Ryzen 5 7600X**

Cores:	6
Threads:	12
Base Clock:	4.7 GHz
Boost Clock:	5.3 GHz
TDP:	105W
Socket:	AM5

**\$299** Select Details

Figure 4-1 CPU Collection

← Back Choose CPU Cooler

Search CPU coolers...

Showing 6 of 50 CPU coolers

**Filters** Reset

Price

\$0 \$500

Manufacturer

Noctua

Corsair

be quiet!

NZXT

Cooler Master

Arctic

Deepcool

Thermaltake

Rating

★★★★★ & Up


★★★★☆ & Up

★★★☆☆ & Up

★★☆☆☆ & Up

★☆☆☆☆ & Up

Air Cooler Cooling Noctua



**Noctua NH-D15**

Brand: Noctua


Type: Air Cooler

Compatible: AM4 AM5 LGA1700 LGA1200

**\$109.00**

Select Details

Air Cooler Cooling Noctua



**Noctua NH-U12S**

Brand: Noctua

Type: Air Cooler

Compatible: AM4 AM5 LGA1700 LGA1200

**\$79.00**

Select Details

Figure 4-2 CPU Cooler Collection

**Note: All Components have A Collection like previous ones.**

16

## 4.3 Tables and Figures

### 4.3.1 Tables

<b>Component Type</b>	<b>Selected Item</b>	<b>Price (USD)</b>	<b>Compatibility Status</b>
CPU	Intel i9-13900K	589	Compatible
GPU	NVIDIA RTX 4090	1599	Compatible
Motherboard	ASUS ROG Z790	499	Compatible
RAM	Corsair 32GB DDR5	199	Compatible
Storage	Samsung 2TB NVMe	149	Compatible
PSU	Corsair 1000W	249	Compatible

*Table 4-1 Example Of Compatibility*

## 4.3.2 Figures

### 4.3.2.1 Authentication and Authorization Pages

The authentication and authorization module was implemented to manage user access and ensure secure interaction with the PC Builder Platform. This module includes user registration, login, email verification, and password recovery functionalities.

The **Login** and **Sign-Up** pages were developed to allow users to authenticate into the system or create a new account. During the registration process, users are required to provide valid credentials and confirm their email address. Email verification is enforced by sending a confirmation link to the user's registered email address, and account activation is completed only after successful email confirmation.

A **Forgot Password** page was also implemented to handle password recovery scenarios. When a user requests to reset their password, a verification code is sent to the registered email address. The user must enter the correct code to proceed with changing the password. If an incorrect code is entered, the system prevents the password update and displays an error message using a toast notification.

During the password reset process, the system enforces predefined password strength requirements to ensure security and compliance with best practices. These requirements include minimum length and complexity rules. Real-time feedback is provided to guide users in creating a valid and secure password.

*The figures below illustrate the authentication and authorization pages, including login, registration, email confirmation, and password recovery interfaces.*

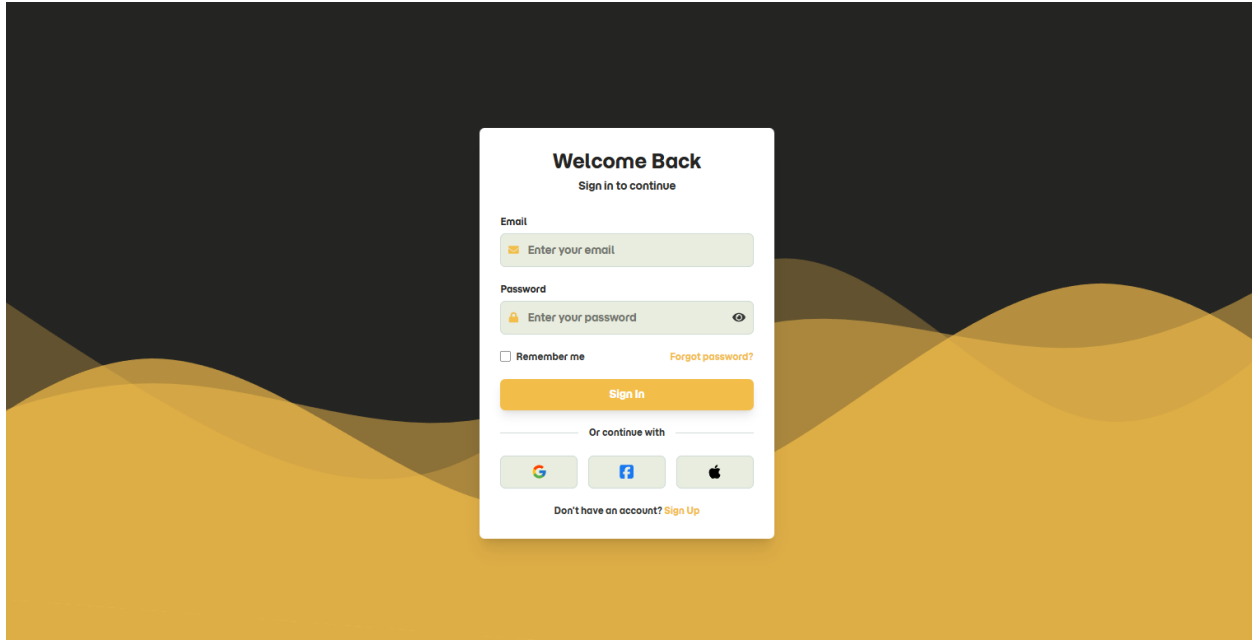


Figure 4-3 Login Page

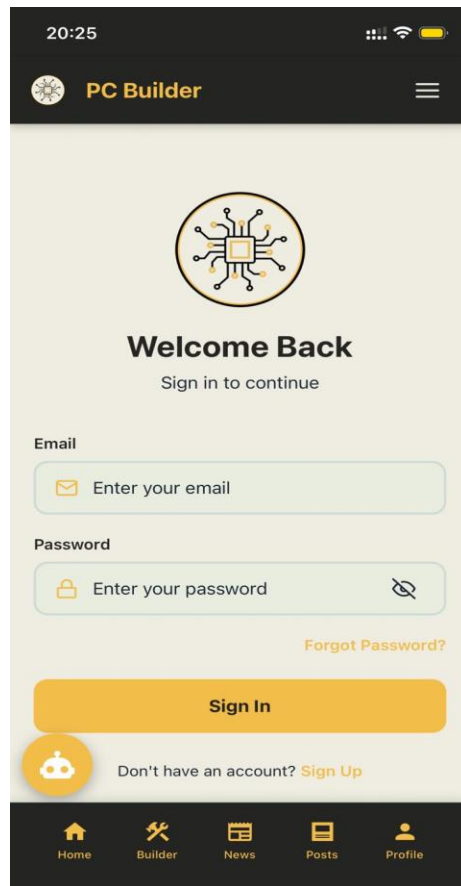


Figure 4-4 Mobile LogIn Page

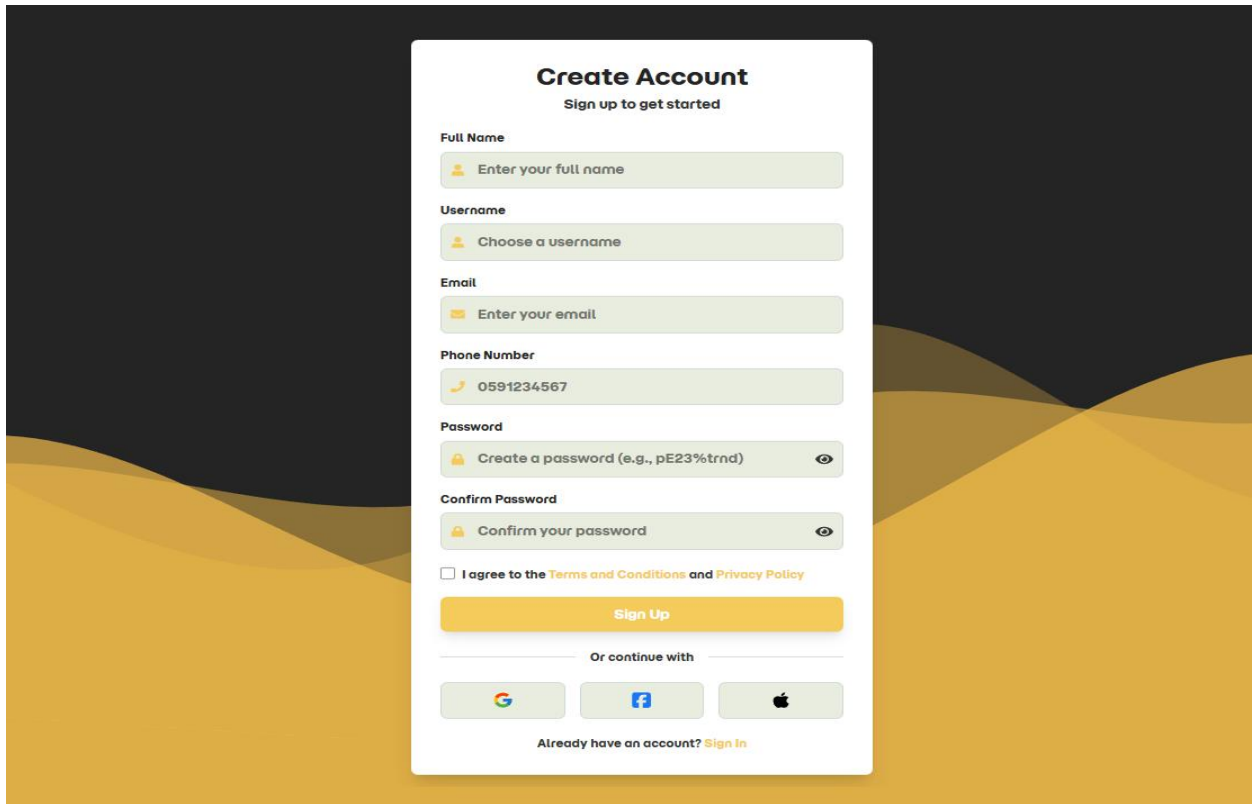


Figure 4-5 Register Page

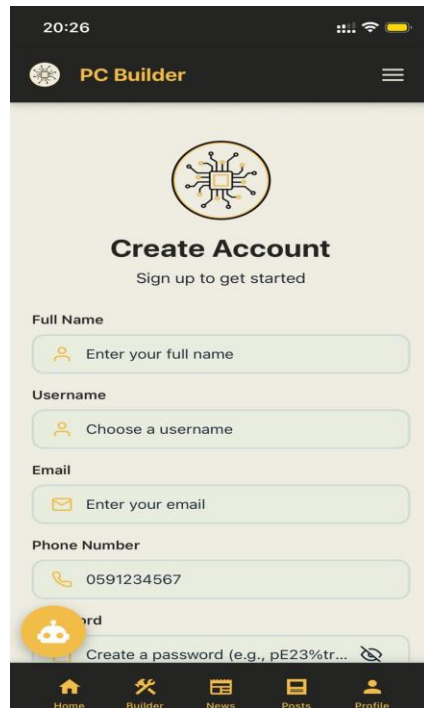


Figure 4-6 Mobile Register Page

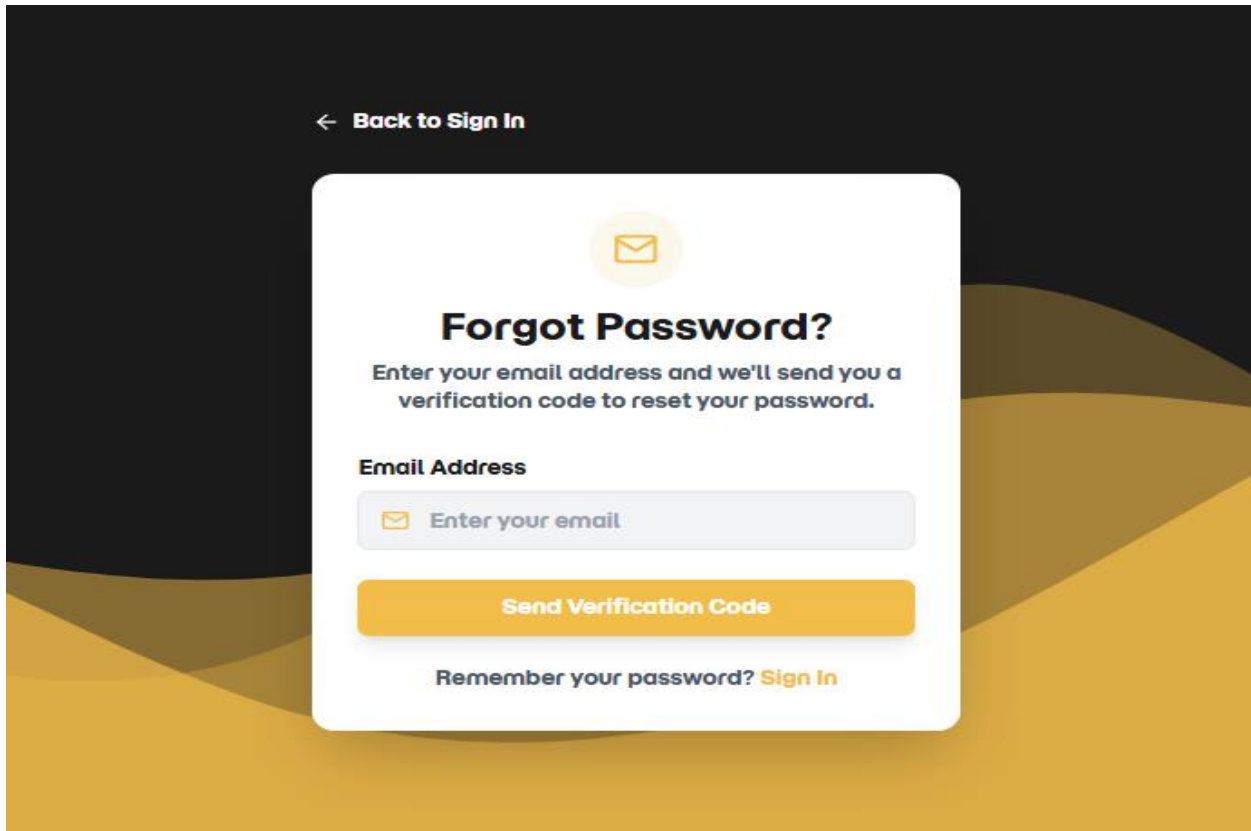


Figure 4-7 Forgot Password Page

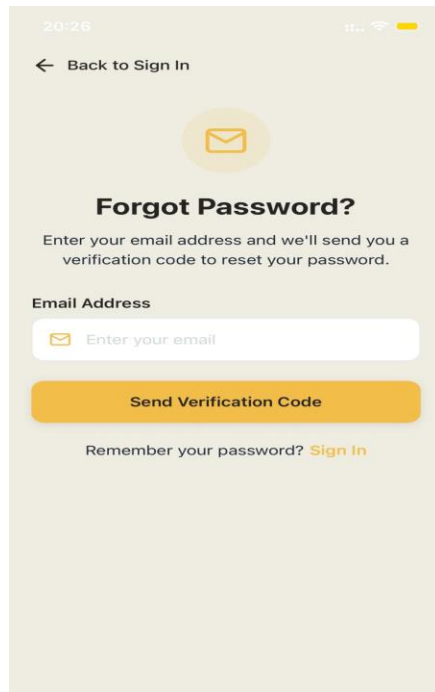


Figure 4-8 Mobile Forgot Pass

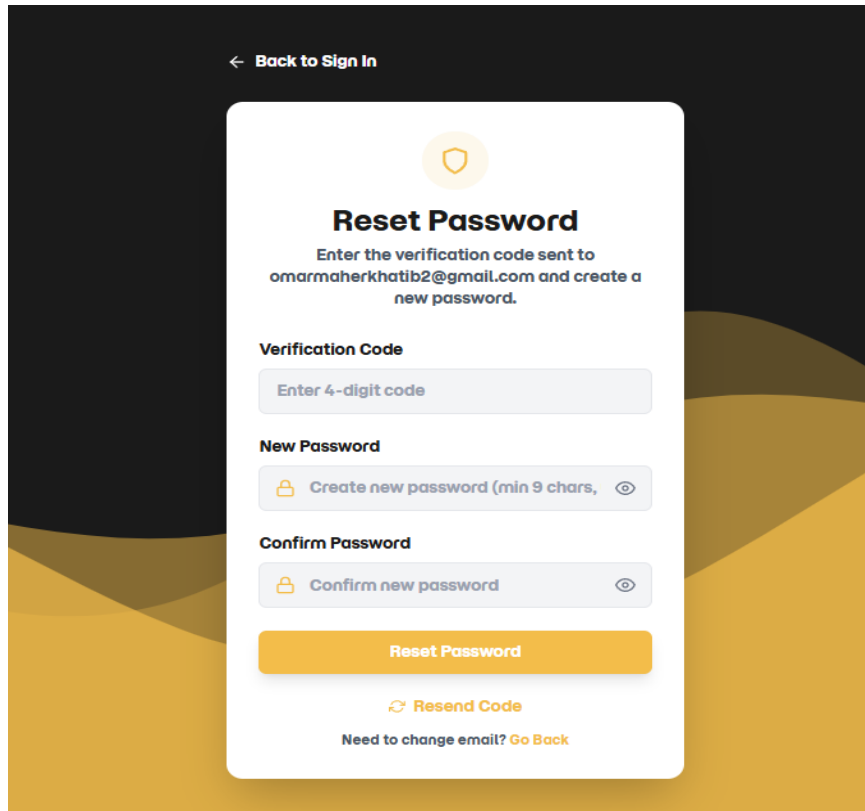


Figure 4-9 Reset Password Page

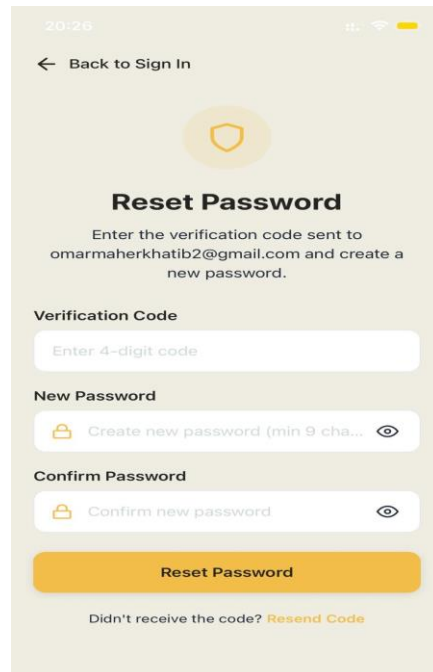


Figure 4-10 Mobile Reset Password Page

### 4.3.3 Builder Page

The **PC Builder page** allows users to design and assemble their custom PC configurations by selecting hardware components, as illustrated in *Figure 4-1*. Through this interface, users can choose different components such as the processor, motherboard, graphics card, memory, storage, and power supply in an interactive and user-friendly manner.

The Builder page is equipped with a **real-time compatibility checking system**. As each component is selected, it is immediately compared against the previously selected components to verify compatibility. This process ensures that all selected parts function correctly together and comply with technical constraints.

If incompatible components are selected, the system highlights the issue by displaying either **critical issues** or **warnings**, depending on the severity of the incompatibility. Each issue is accompanied by a clear explanation describing the reason for the incompatibility, allowing the user to understand the underlying technical limitation.

In addition, the platform provides **AI-powered recommendations** to resolve compatibility issues. The recommendation system analyzes the available hardware data stored within the platform and suggests alternative components that are compatible with the current build. These intelligent suggestions assist users in replacing problematic components with suitable alternatives, thereby improving the overall build quality and user experience.

*The figures below demonstrate the PC Builder interface, real-time compatibility validation, detected issues, and AI-generated recommendations.*

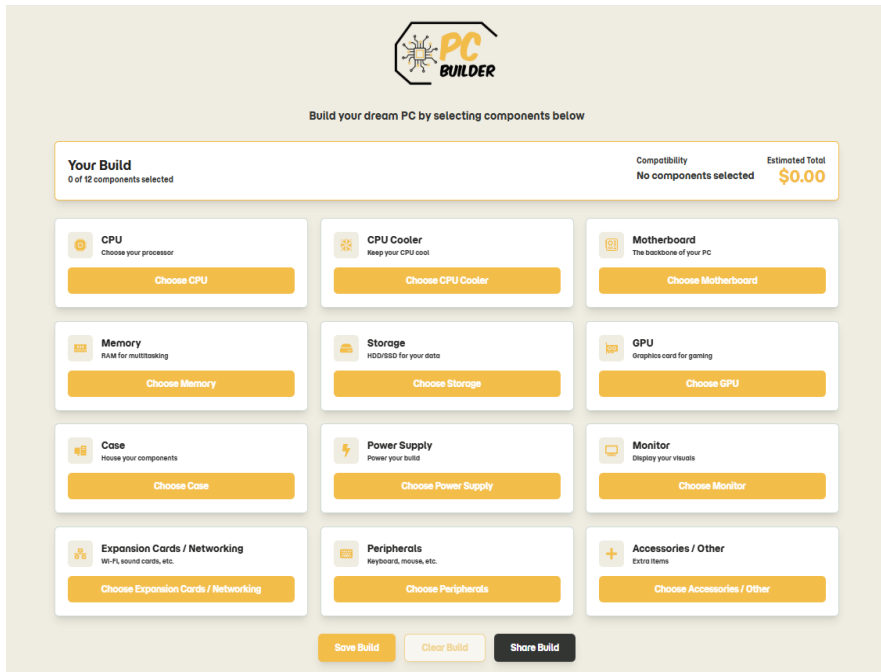


Figure 4-11 Builder Page

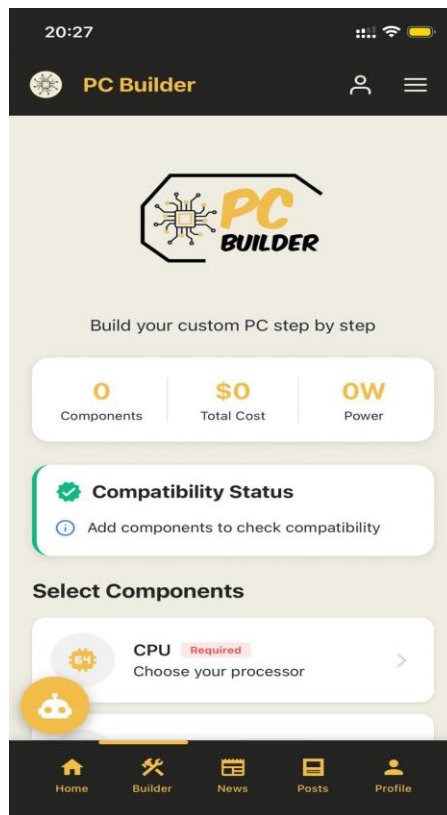


Figure 4-12 Mobile Pc Builder

**CPU**  
Choose your processor

Intel Core i5-13600K S319

Change Remove

**CPU Cooler**  
Keep your CPU cool

Choose CPU Cooler

**Motherboard**  
The backbone of your PC

Choose Motherboard

**Memory**  
RAM for multitasking

Choose Memory

**Storage**  
HDD/SSD for your data

Choose Storage

**GPU**  
Graphics card for gaming

Choose GPU

**Case**  
House your components

Choose Case

**Power Supply**  
Power your build

Choose Power Supply

**Monitor**  
Display your visuals

Choose Monitor

**Expansion Cards / Networking**  
Wi-Fi, sound cards, etc.

Choose Expansion Cards / Networking

**Peripherals**  
Keyboard, mouse, etc.

Choose Peripherals

**Accessories / Other**  
Extra items

Choose Accessories / Other

Save Build Clear Build Share Build

**Compatibility Check**


☑ All components are compatible!

**Performance Score**

**24**  
Entry-Level

Estimated Power: 145W  
PSU Recommendation: 189W+

Figure 4-13 Start Choosing Components



Build your dream PC by selecting components below

**Your Build**  
4 of 12 components selected

Compatibility  
**Build Incomplete**

Estimated Total  
**\$1036.00**

**CPU**  
Choose your processor

Intel Core i5-13600K  
\$319

Change Remove

**CPU Cooler**  
Keep your CPU cool

Noctua NH-D15  
\$109

Change Remove

**Motherboard**  
The backbone of your PC

ASUS ROG STRIX Z790-E GAMING WIFI  
\$429

Change Remove

**Memory**  
RAM for multitasking

Corsair Vengeance RGB DDR5  
\$179

Change Remove

**Storage**  
HDD/SSD for your data

Choose Storage

**GPU**  
Graphics card for gaming

Choose GPU

**Case**  
House your components

Choose Case

**Power Supply**  
Power your build

Choose Power Supply

**Monitor**  
Display your visuals

Choose Monitor

**Expansion Cards / Networking**  
Wi-Fi, sound cards, etc.

Choose Expansion Cards / Networking

**Peripherals**  
Keyboard, mouse, etc.

Choose Peripherals

**Accessories / Other**  
Extra Items

Choose Accessories / Other

Save Build

Clear Build

Share Build

Figure 4-14 Choosing Components With Real Time Compatibility

**Compatibility Check**

**Warnings (2):**

DDR5 speeds above 5600MHz may require CPU with strong memory controller. Test for stability.

**Additional Info:**  
Reason: Very high DDR5 speeds stress CPU memory controller

Recommendation: High-end CPUs (i7/i9, Ryzen 7/9) recommended for DDR5-6000+ speeds

Install 2 RAM sticks in slots A2 and B2 (usually 2nd and 4th slots) for optimal dual-channel performance. Check motherboard manual.

**Additional Info:**  
Reason: Slot placement affects memory performance

Recommendation: Consult motherboard manual for correct dual-channel slot configuration (typically A2/B2)

**Performance Score**

36

Entry-Level

Estimated Power:	236W
PSU Recommendation:	307W+

Figure 4-15 Compatibility Warnings With Ai Recommendations

The screenshot displays a grid of 12 PC component categories, each with a selected item and price. At the bottom are three buttons: 'Save Build', 'Clear Build', and 'Share Build'.

Component	Selected Item	Price
CPU	Intel Core i7-13700K	\$419
CPU Cooler	Noctua NH-D15	\$109
Motherboard	ASUS ROG STRIX Z790-E GAMING WIFI	\$429
Memory	Corsair Vengeance RGB DDR4	\$119
Storage	Choose Storage	-
GPU	Gigabyte GeForce RTX 4090	\$1649
Case	NZXT H510 Elite	\$149
Power Supply	EVGA SuperNOVA 850 G6	\$139
Monitor	ASUS TUF Gaming VG27AQ	\$329.99
Expansion Cards / Networking	Creative Sound Blaster AE-9	\$299.99
Peripherals	Corsair K70 RGB Pro	\$169.99
Accessories / Other	CableMod Pro ModMesh Cable Kit	\$89.99

Figure 4-16 Build With Critical Issues

The dashboard provides a detailed analysis of the build's compatibility and performance. It highlights a critical issue regarding memory type incompatibility and a warning about RAM slot configuration. Performance metrics show a score of 64, categorized as 'Mid-Range', with an estimated power requirement of 713W.

Section	Content
Compatibility Check	<p><b>Critical Issues (1):</b></p> <p>Memory type incompatibility: Corsair Vengeance RGB DDR4 is DDR4 but ASUS ROG STRIX Z790-E GAMING WIFI requires DDR5. These are physically incompatible - different notch positions.</p> <p><b>Detailed Analysis:</b>  Reason: RAM generation mismatch  Performance Impact: RAM modules will not physically fit in motherboard slots  Recommendation: Use DDR5 memory modules with this motherboard</p> <p><b>Warnings (1):</b></p> <p>Install 2 RAM sticks in slots A2 and B2 (usually 2nd and 4th slots) for optimal dual-channel performance. Check motherboard manual.</p> <p><b>Additional Info:</b>  Reason: Slot placement affects memory performance  Recommendation: Consult motherboard manual for correct dual-channel slot configuration (typically A2/B2)</p>
Performance Score	<p><b>64</b> Mid-Range</p> <p>Estimated Power: 713W  PSU Recommendation: 927W+</p>

Figure 4-17 Critical Issues With Ai Nessesary Recommendations

### Your Build

10 of 12 components selected

Compatibility ✔ All Compatible  
Build looks great!

Estimated Total **\$3783.96**

<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>CPU</b> Choose your processor</p> <p>Intel Core i7-13700K \$449</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>CPU Cooler</b> Keep your CPU cool</p> <p>Noctua NH-D15 \$109</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Motherboard</b> The backbone of your PC</p> <p>ASUS ROG STRIX Z790-E GAMING WIFI \$429</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>
<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Memory</b> RAM for multitasking</p> <p style="text-align: center; background-color: #f4a460; padding: 5px; width: 100%;">Choose Memory</p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Storage</b> HDD/SSD for your data</p> <p style="text-align: center; background-color: #f4a460; padding: 5px; width: 100%;">Choose Storage</p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>GPU</b> Graphics card for gaming</p> <p>Gigabyte GeForce RTX 4090 \$1649</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>
<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Case</b> House your components</p> <p>NZXT H510 Elite \$149</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Power Supply</b> Power your build</p> <p>EVGA SuperNOVA 850 G6 \$139</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Monitor</b> Display your visuals</p> <p>ASUS TUF Gaming VG27AQ \$329.99</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>
<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Expansion Cards / Networking</b> Wi-Fi, sound cards, etc.</p> <p>Creative Sound Blaster AE-9 \$299.99</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Peripherals</b> Keyboard, mouse, etc.</p> <p>Corsair K70 RGB Pro \$169.99</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Accessories / Other</b> Extra items</p> <p>CableMod Pro ModMesh Cable Kit \$89.99</p> <p style="text-align: right;"><span style="background-color: #f4a460; padding: 2px 5px;">Change</span> <span style="background-color: #e53935; color: white; padding: 2px 5px;">Remove</span></p> </div>

Figure 4-18 Compatible Complete Build

<p><b>Compatibility Check</b></p> <div style="background-color: #e8f5e9; padding: 5px; text-align: center; margin-top: 5px;"> <span style="color: green;">✔ All components are compatible!</span> </div>	<p><b>Performance Score</b></p> <div style="text-align: center; margin-top: 10px;"> <p style="font-size: 2em; color: #f4a460;">72</p> <p>Mid-Range</p> </div> <p style="font-size: 0.8em; margin-top: 10px;">             Estimated Power: <span style="float: right;">707W</span>              PSU Recommendation: <span style="float: right;">919W+</span> </p>
--	---

Figure 4-19 No Warnings Or Critical Issues

Note: The Same Process In the Mobile.

### 4.3.4 Compare

The **Component Comparison page** was designed to enable users to compare hardware components of the same category in a clear and structured manner. This page allows users to select and compare up to **four components simultaneously**, providing a comprehensive side-by-side comparison.

Through this interface, users can analyze the differences between selected components in terms of **performance, price, technical specifications, and overall value**. The comparison highlights which component offers higher performance, which is more cost-effective, and which option best suits the user's requirements.

By presenting key metrics in a unified view, the comparison page assists users in making informed decisions without the need to manually research multiple products. This feature significantly enhances usability and reduces the time required to evaluate hardware options.

*The figures below illustrate the component comparison interface and the side-by-side evaluation of multiple hardware components.*

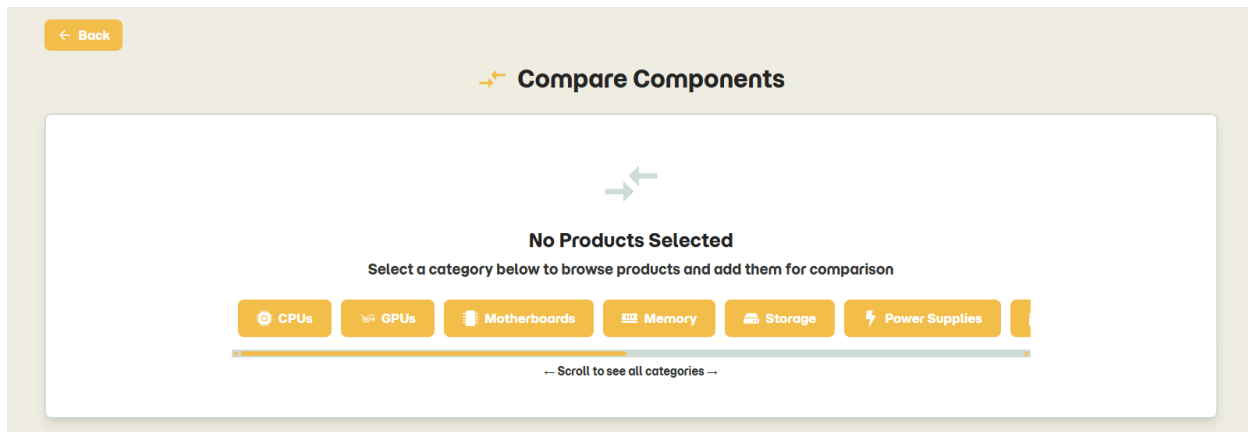


Figure 4-20 Compare Page

The screenshot shows a CPU selection interface. On the left, there are filters for Price (ranging from \$20 to \$2000), Manufacturer (Intel and AMD), Rating (from 5 stars & up to 1 star & up), and Core Count (4, 6, 8, 10, 12, 14 Cores). The main area displays three product cards:

- Ryzen 7700X:** Price \$319, Boost Clock 5.1 GHz, TDP 125W, Socket LGA1700.
- Core i9-13900K:** Price \$419, Boost Clock 5.4 GHz, TDP 125W, Socket LGA1700.
- Ryzen 9 7900X:** Price \$299, Boost Clock 5.3 GHz, TDP 105W, Socket AM5.

Below the cards, there are more options for Ryzen 7700X (\$349) and Ryzen 9 7900X (\$449). At the bottom, a navigation bar shows 'Compare (4/4)' and buttons for 'Intel Core i5-13600K', 'Intel Core i7-13700K', 'AMD Ryzen 5 7600X', 'AMD Ryzen 7700X', 'Clear All', and 'Compare Now'.

Figure 4-21 Choose Components To Compare

The screenshot shows a 'Compare CPUs' table with the following specifications:

Specification	Intel Core i5-13600K	Intel Core i7-13700K	AMD Ryzen 5 7600X	AMD Ryzen 7700X
Price	\$319	\$419	\$299	\$349
Brand	Intel	Intel	AMD	AMD
Model	Core i5-13600K	Core i7-13700K	Ryzen 5 7600X	Ryzen 7700X
Cores	14	16	6	8
Threads	20	24	12	16
Performance Core Count	14	16	6	8
Performance Thread Count	20	24	12	16
Performance Core Clock GHz	3.5	3.4	4.7	4.5

Figure 4-22 Display Components Details In Table

The next Figure is related to Figure 4-22

Performance Core Clock G Hz	3.5	3.4	4.7	4.5
Base Clock G Hz	3.5	3.4	4.7	4.5
Boost Clock G Hz	5.1	5.4	5.3	5.4
L2 Cache M B	20	24	6	8
L3 Cache M B	24	30	32	32
Tdp Watts	125	125	105	105
Socket	LGA1700	LGA1700	AM5	AM5
Integrated Graphics	UHD Graphics 770	UHD Graphics 770	Radeon Graphics	Radeon Graphics
Series	Core i5	Core i7	Ryzen 5	Ryzen 7
Microarchitecture	Raptor Lake	Raptor Lake	Zen 4	Zen 4
Core Family	Intel Core 13th Gen	Intel Core 13th Gen	AMD Ryzen 7000	AMD Ryzen 7000
Smt				
Ecc Support	-	-	-	-
Includes Cooler	-	-	-	-
Performance Score	9200	10500	8800	9800
Rating	4.5	4.7	4.4	4.6
Price	319	419	299	349
Detail Images	/images/cpus/intel-i5-13600k.jpg/images/cpus/i5-13.jpg/images/cpus/Intel Core i5-14600K.jpg/images/cpus/i5-12.jpg			-
Tdp	125W	125W	105W	105W

### 4.3.5 Completed Build Page

The **Completed Builds** page presents a collection of pre-built PC configurations that have been previously created and published by other users. These builds represent real, tested configurations and include **user feedback in the form of ratings and reviews**, allowing visitors to evaluate the quality and performance of each build.

This page enables users to explore ready-made builds, analyze community experiences, and benefit from practical insights shared by other users. The availability of reviews and ratings enhances transparency and supports informed decision-making.

Additionally, users are provided with the option to submit their own completed PC build through the **“Submit Your Build”** feature. Upon submission, the user is redirected to a dedicated page where a request is sent for review. Each submitted build undergoes an **administrative approval process**, during which the administrator may either approve the build for publication or reject it to maintain content quality and platform standards.

*The figures below demonstrate the Completed Builds interface, user feedback, and the build submission workflow.*

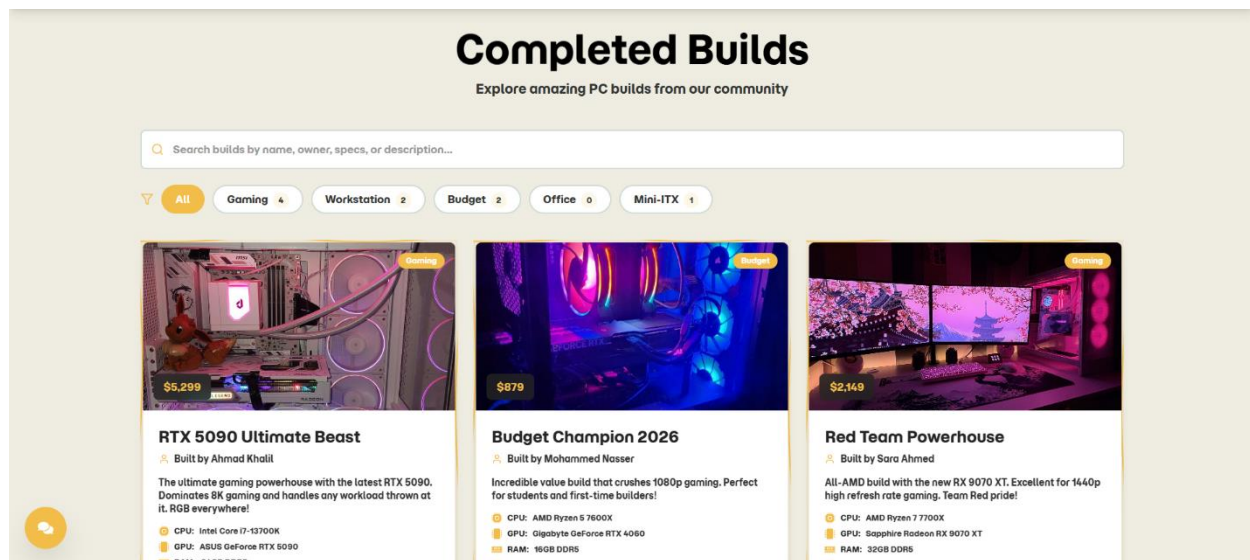


Figure 4-23 Completed Builds Page

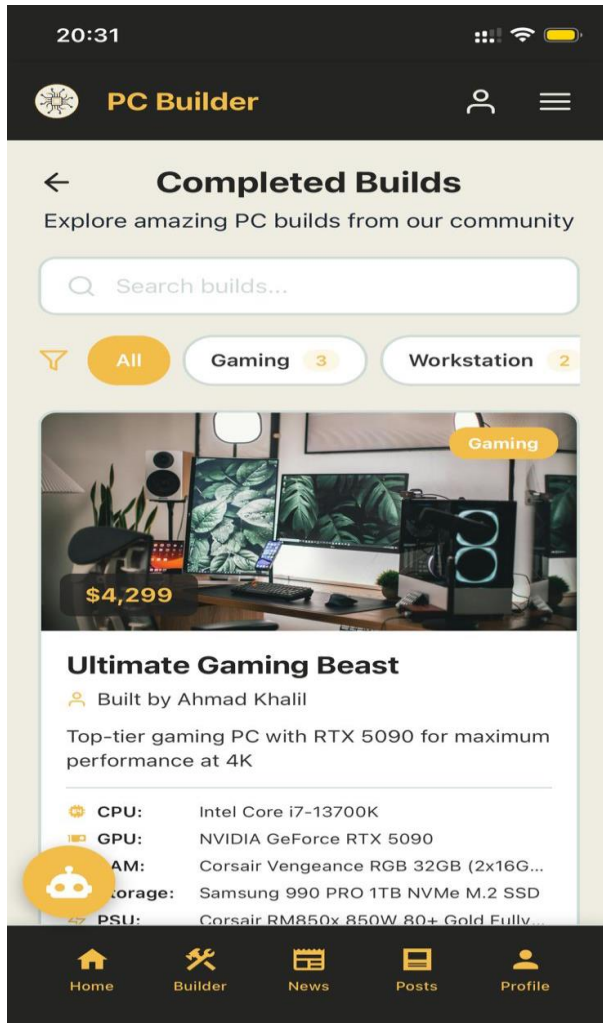


Figure 4-24 Mobile Completed Builds

Builder Products Compare Completed Builds Community Chat Tech Support

[← Back to Builds](#)

## RTX 5090 Ultimate Beast Gaming \$5,299

Built by Ahmad Khalil | January 2026

**About This Build**

The ultimate gaming powerhouse with the latest RTX 5090. Dominates 8K gaming and handles any workload thrown at it. RGB everywhere! This beast was built to push the absolute limits of gaming performance.

### Full Specifications

- Processor**  
Intel Core i7-13700K
- Graphics Card**  
ASUS GeForce RTX 5090
- Motherboard**  
ASUS ROG STRIX Z790-E GAMING WIFI
- Memory**  
64GB DDR5
- Storage**  
2TB NVMe SSD + 4TB HDD
- CPU Cooler**  
NZXT Kraken Z73
- Power Supply**  
1000W 80+ Platinum

Builder Products Compare Completed Builds Community Chat Tech Support

892 Likes | 156 Comments | Share

### Comments (156)

Add a comment...

**Post Comment**

**AM** Ali Mansour 2 days ago  
Amazing build! How are the temps under load?  
👍 12

**HS** Huda Salem 3 days ago  
Love the component choices. Very well balanced!  
👍 8

**KZ** Karim Zaki 1 week ago  
This is exactly what I was looking for. Thanks for sharing!  
👍 15

- Processor  
Intel Core i7-13700K
- Graphics Card  
ASUS GeForce RTX 5090
- Motherboard  
ASUS ROG STRIX Z790-E GAMING WIFI
- Memory  
64GB DDR5
- Storage  
2TB NVMe SSD + 4TB HDD
- CPU Cooler  
NZXT Kraken Z73
- Power Supply  
1000W 80+ Platinum
- Case  
Lian Li O11 Dynamic EVO

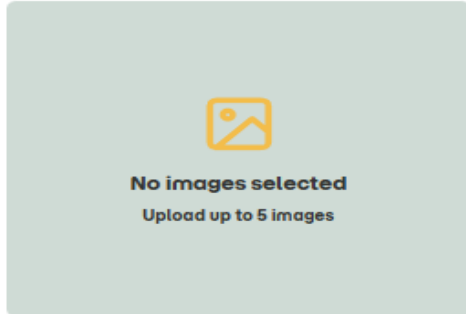
**Total Price \$5,299**

Figure 4-25 Completed Build Details

# Submit Your Build

Share your amazing PC build with the community and inspire others!

## Build Images \* (0/5)



 Choose Images

Max 5 images. Each file max size: 5MB. Supported: JPG, PNG, WebP

## PC Specifications

### CPU / Processor \*

e.g., Intel Core i9-14900K

### GPU / Graphics Card \*

e.g., NVIDIA RTX 4090

### RAM / Memory

e.g., 32GB DDR5

### Storage

e.g., 1TB NVMe SSD

### Power Supply (PSU)

e.g., 850W 80+ Gold

## Basic Information

### Build Name \*

e.g., Ultimate Gaming Beast

### Your Name \*

Enter your name

### Category \*

Gaming

### Total Price

e.g., \$2,500

## Description

### Tell us about your build

Describe your build, its purpose, what you love about it, or any special features...

Cancel

Submit Build

Figure 4-26 Submit Your Build Page

[Back to Products](#)



**apu**  
**Intel Core i5-13600K**  
 Brand: Intel  
 ★★★★★ 4.5 312 reviews  
 ♥ 130 likes 🔄 77 shares

**\$319.00** USD  
 Free shipping available

**Description**  
 High-performance 14-core processor from Intel. Perfect for gaming and demanding applications with 3.5GHz base clock and 5.1GHz boost. 125W TDP ensures efficient power consumption.... [Read more](#)

[+ Add to Build](#)

[Specifications](#) [Reviews \(312\)](#) [Compatibility & Features](#)

[Specifications](#) [Reviews \(312\)](#) [Compatibility & Features](#)

<b>BRAND</b> Intel	<b>MODEL</b> Core i5-13600K
<b>CORES</b> 14	<b>THREADS</b> 20
<b>BASE CLOCK</b> 3.5 GHz	<b>BOOST CLOCK</b> 5.1 GHz
<b>TDP</b> 125W	<b>SOCKET</b> LGA1700
<b>INTEGRATED GRAPHICS</b> UHD Graphics 770	<b>PERFORMANCE SCORE</b> 9200

Figure 4-27 Component Details

### 4.3.6 Community

The **Community module** was designed to enhance **user interaction, engagement, and collaboration** within the PC Builder platform. It provides a structured environment where users can share experiences, publish content, and interact with other PC building enthusiasts, while maintaining system security and content quality.

Access to certain community features is **restricted to authenticated users only**. Specifically, the **Posts page** and the **Shop page** require users to be logged in before access is granted. This restriction ensures accountability, prevents misuse, and protects the integrity of user-generated content. In contrast, informational pages such as **News** and **Quantum Computing** are publicly accessible and do not require user authentication, as they are intended for general knowledge dissemination rather than interaction.

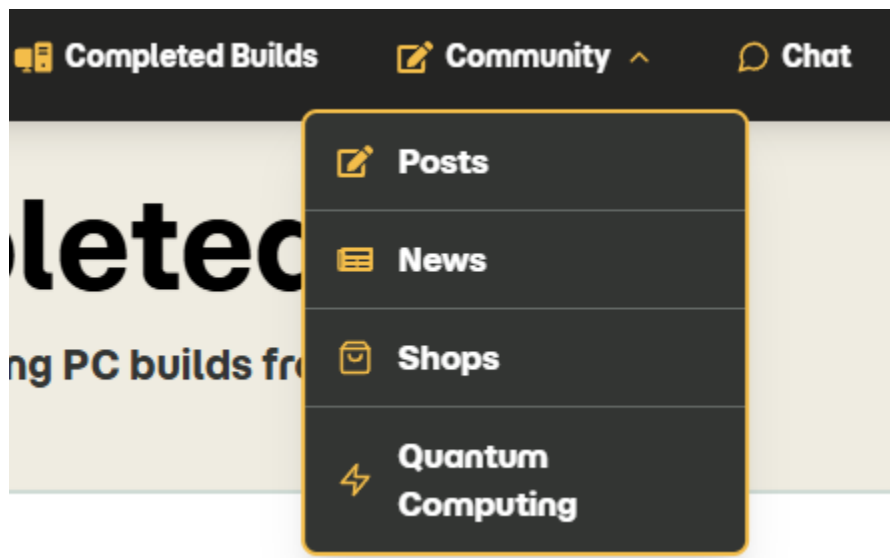


Figure 4-28 Community DropDown

### 4.3.6.1 Posts Page

The **Posts page** allows authenticated users to **submit posts** related to PC building, hardware discussions, troubleshooting, and personal experiences. To ensure content reliability and maintain platform standards, all submitted posts are subject to a **moderation and approval process**.

Once a user submits a post, it is forwarded to the system administrator for review. The administrator then decides whether to **approve or reject** the post based on predefined criteria such as relevance, accuracy, and compliance with community guidelines. Only approved posts become visible to other users.

This approval workflow plays a vital role in:

- Preventing spam and misleading information
- Maintaining a professional and respectful environment
- Ensuring high-quality technical discussions

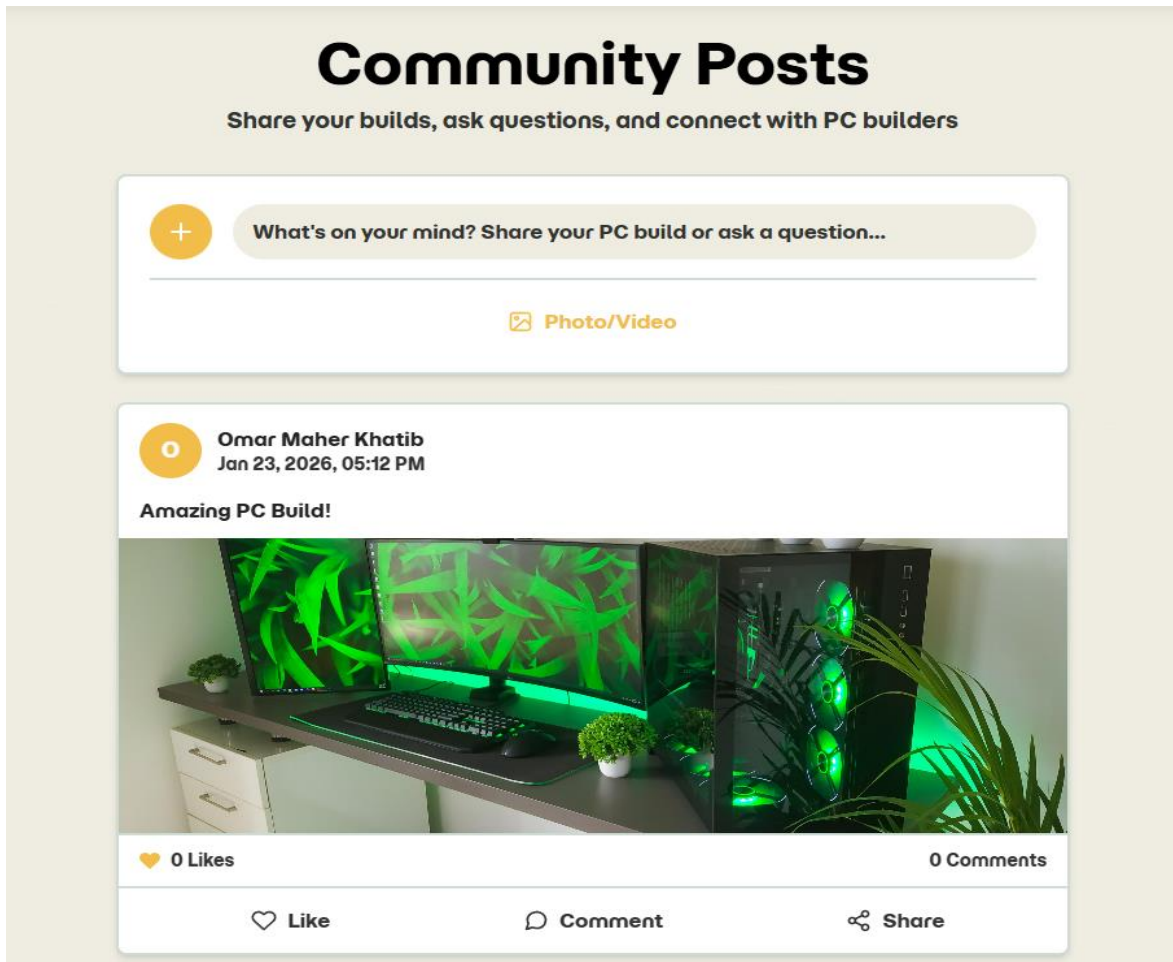


Figure 4-29 Posts Page

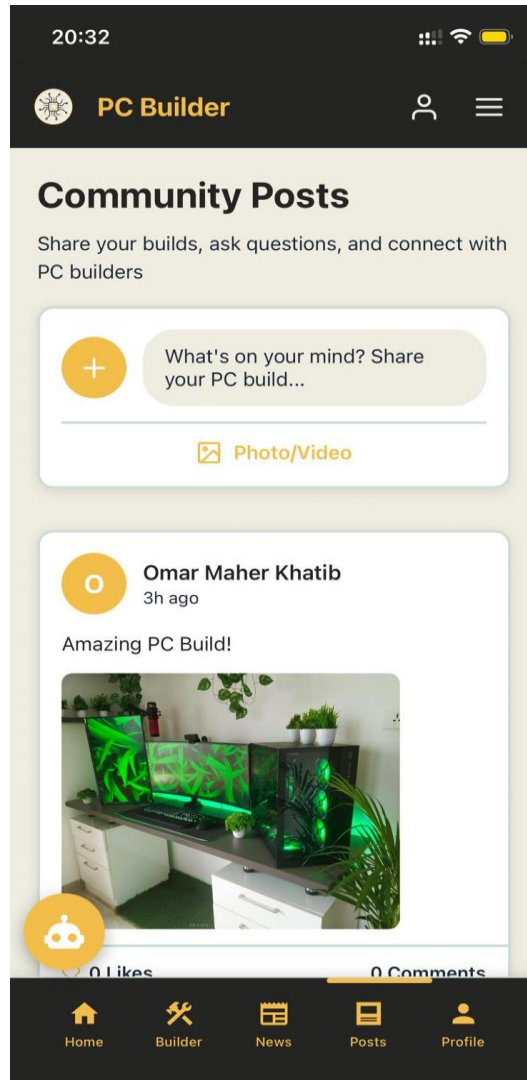


Figure 4-30 Mobile Posts Page

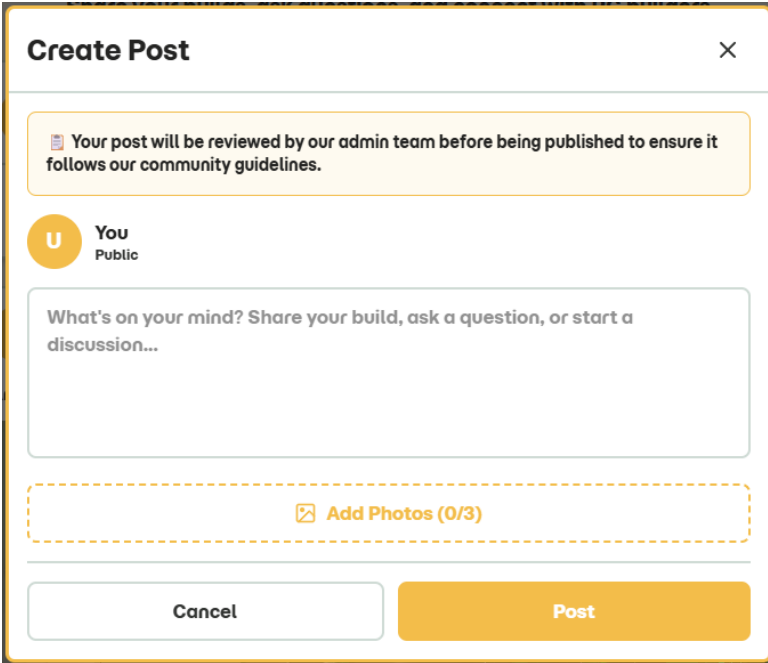


Figure 4-32 Create Post Modal

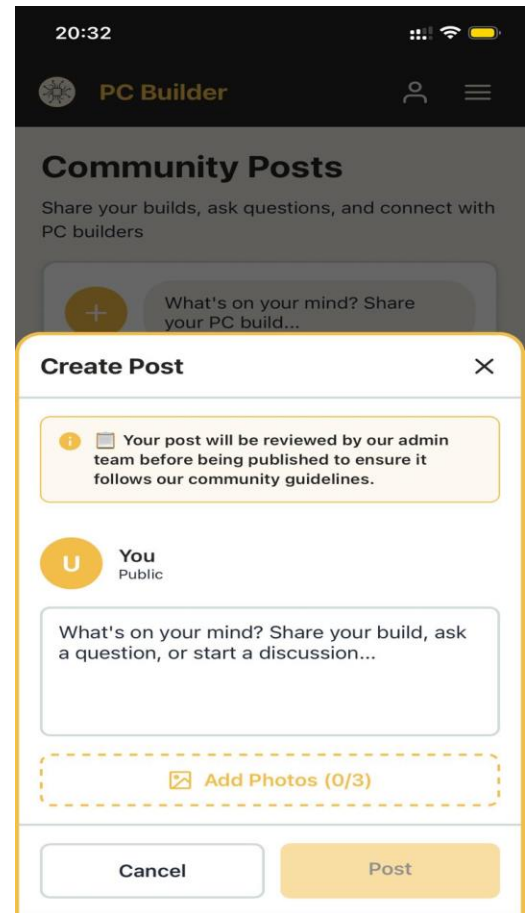


Figure 4-31 Mobile Create post Modal

### 4.3.6.2 Shop Page

The **Shop page** provides users with the ability to **request the publication of their own shops** on the platform. This feature supports individuals or vendors who wish to showcase PC-related products, components, or services.

To publish a shop, the user submits a **shop creation request** through the platform. Similar to post submissions, shop requests undergo a **manual review by the administrator**. Each request is either approved or rejected based on factors such as credibility, relevance to PC building, and adherence to platform policies.

The administrative control applied to shop publishing ensures:

- Trustworthiness of listed shops
- Protection of users from fraudulent content
- A curated and reliable marketplace experience

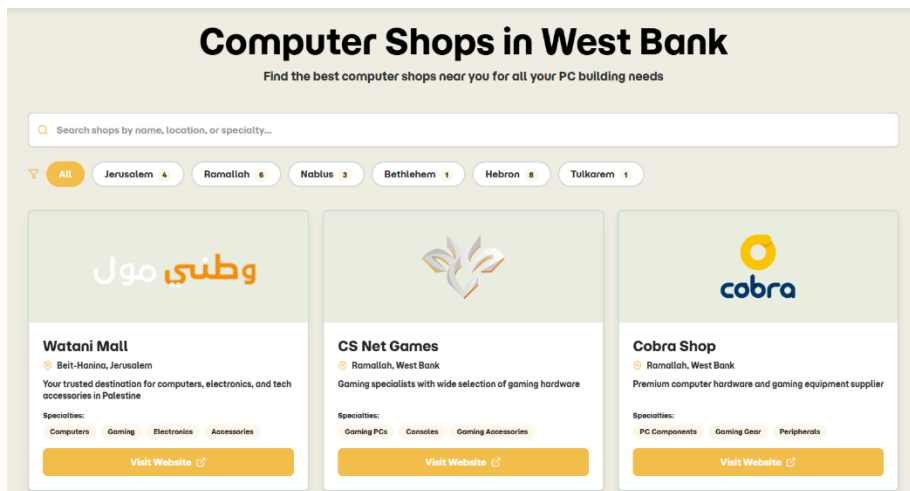


Figure 4-33 Shops Page

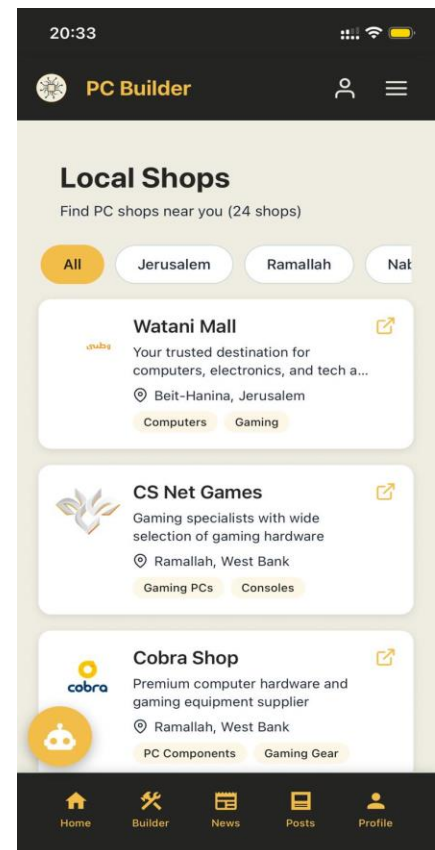


Figure 4-34 Mobile Shops Page

### Submit Your Shop for Review ×

Your submission will be reviewed by our team before being published on the website.

**Shop Name \***

**Owner Name \***

**Shop Logo \***

Click to upload logo  
JPG, PNG, WEBP, or SVG (Max 2MB)

<b>Email *</b>	<b>Phone *</b>
<input style="width: 95%;" type="text" value="shop@example.com"/>	<input style="width: 95%;" type="text" value="+970 XX XXX XXXX"/>
<b>City *</b>	<b>Exact Location *</b>
<input style="width: 95%;" type="text" value="Select a city"/>	<input style="width: 95%;" type="text" value="Street address, area"/>

### Submit Your Shop for Review ×

<b>Email *</b>	<b>Phone *</b>
<input style="width: 95%;" type="text" value="shop@example.com"/>	<input style="width: 95%;" type="text" value="+970 XX XXX XXXX"/>
<b>City *</b>	<b>Exact Location *</b>
<input style="width: 95%;" type="text" value="Select a city"/>	<input style="width: 95%;" type="text" value="Street address, area"/>

**Website or Facebook Page URL \***

**Shop Description \***

**Specialties \***

Separate multiple specialties with commas

Cancel
Submit for Review

Figure 4-35 Submit Shop Request Modal

### 4.3.6.3 Community Impact and User Interaction

The Community module significantly contributes to the platform's overall value by fostering **active participation and knowledge sharing** among users. By combining controlled access, administrative moderation, and user-driven content, the system achieves a balance between **openness and reliability**.

Through posts, reviews, and shop interactions, users are encouraged to exchange insights, provide feedback, and contribute to a continuously growing knowledge base. This design approach strengthens user trust, increases engagement, and supports the long-term sustainability of the PC Builder platform.

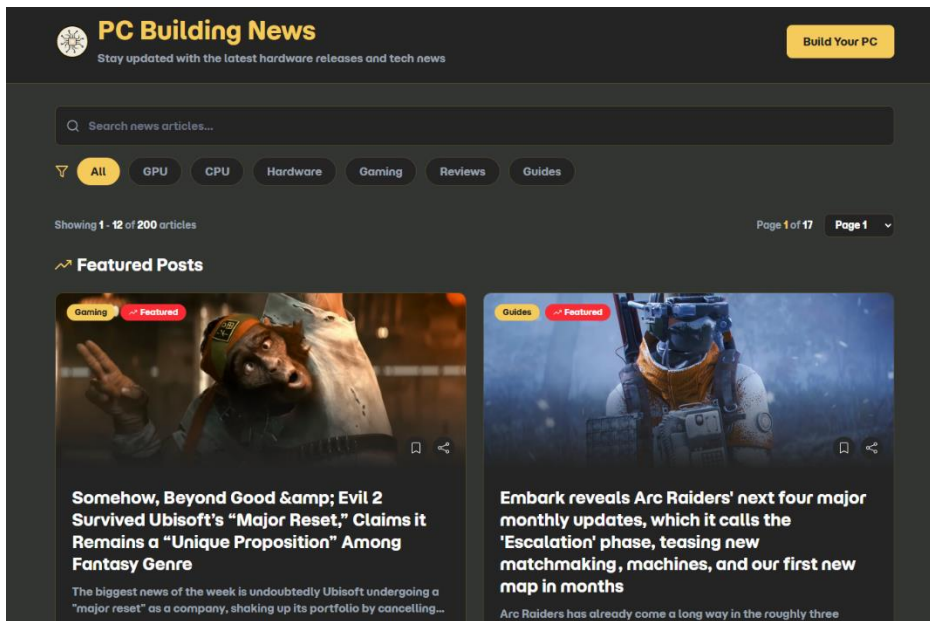


Figure 4-36 News Page

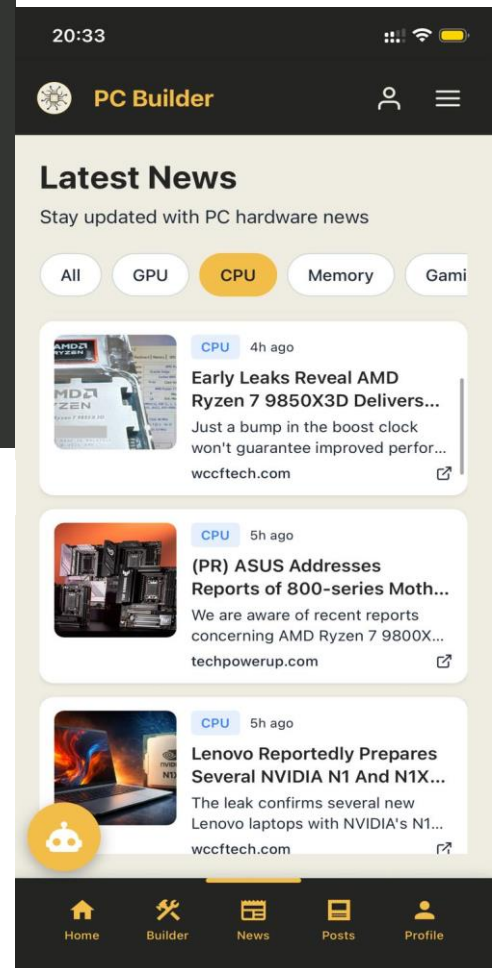


Figure 4-37 Mobile News Page

# Beyond Silicon: The Quantum Revolution

Discover how quantum computing is reshaping the future of performance, power, and possibility—  
and what it means for your next PC.

Explore Quantum Future →

Check Your PC Score

## Computing at the Speed of Nature

Traditional computers process information using bits—1s and 0s. Quantum computers use **qubits**, which can exist in multiple states simultaneously (superposition) and influence each other across distances (entanglement).

Think of it like this: A classical computer checks every door in a maze one by one. A quantum computer checks all doors at once.

### Quantum Advantage



For specific tasks, quantum computers can be 158 million times faster than classical systems.

Classical Bit

0

Classical Bit: Either 0 OR 1

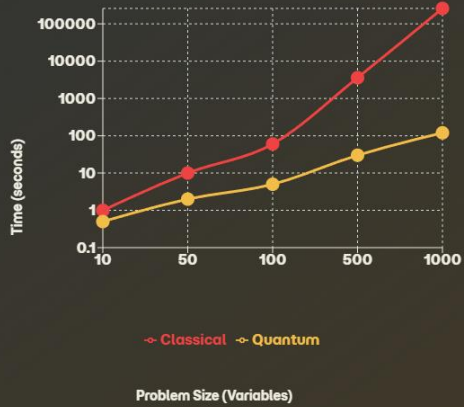
Figure 4-38 Quantum Page 1

## Two Paradigms, Infinite Possibilities

Feature	Classical Computing	Quantum Computing
Basic Unit	Bit (0 or 1)	Qubit (0, 1, or both)
Processing	Sequential/Parallel	Superposition + Entanglement
Best For	Everyday tasks, gaming, general computing	Complex optimization, simulation, cryptography
Error Rate	$\sim 10^{-17}$	$\sim 10^{-2}$ (improving)
Temperature	Room temperature	Near absolute zero (-273°C)
Scalability	Billions of transistors per chip	Currently 50-1000 qubits
Speed (Specific Tasks)	Baseline	100M - 158M times faster

## The Quantum Advantage

Problem Complexity vs Time



Quantum Advantage Domains

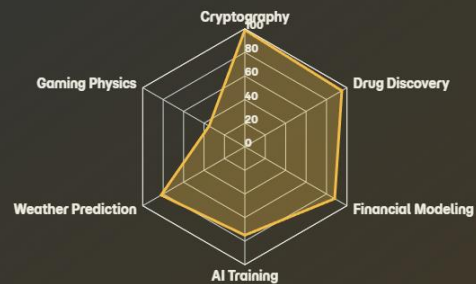
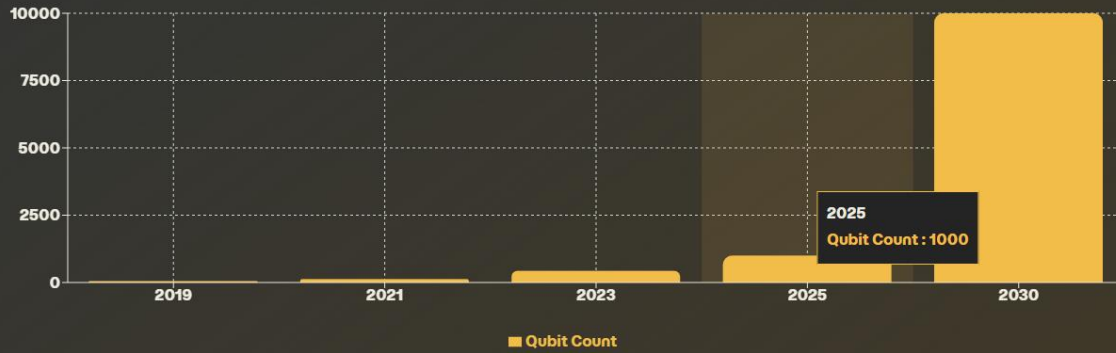


Figure 4-39 Quantum Page 2

## Qubit Count Growth Over Time



\*2025-2030 values are projections based on current growth trends

## Your PC in 2035: Quantum-Hybrid Architecture

- 2025** **2025-2027: Quantum Co-Processors**
- Classical CPU handles everyday tasks
  - Quantum Processing Unit (QPU) offloads specific workloads
  - First consumer "quantum accelerators" for AI and encryption

- 2028** **2028-2032: Hybrid Quantum-Classical Systems**
- Integrated quantum cores on high-end CPUs
  - Quantum-enhanced GPUs for ray tracing and physics simulations
  - Quantum memory (qRAM) for instant-access storage

- 2033+** **2033+: Full Quantum Personal Computing**
- Room-temperature qubits (if breakthroughs occur)
  - Quantum operating systems and software ecosystems
  - "Quantum gaming" with real-time physics simulations

### CPU Quantum Co-Processors

**Current (2026):**  
AMD Ryzen 9 9950X (16 cores, 5.7 GHz)

**Future (2030+):**  
Quantum-Classical Hybrid (16 classical cores + 64 qubit QPU)

~ Impact: 100x faster for optimization, AI, and simulation tasks

### GPU Quantum Ray Tracing

**Current (2026):**  
RTX 5090 (21,760 CUDA cores)

**Future (2030+):**  
QRT-8000 (15,000 classical cores + 128 qubit ray tracing accelerator)

~ Impact: Real-time global illumination with perfect accuracy

### Memory Quantum RAM (qRAM)

**Current (2026):**  
DDR5 6400 MHz (64GB)

**Future (2030+):**  
Quantum-Enhanced Memory (1TB instant access)

~ Impact: Zero latency for AI models and large datasets

### Storage Quantum Encryption

**Current (2026):**  
NVMe Gen 5 SSD (10 GB/s)

**Future (2030+):**  
Quantum-Safe Storage with native quantum key distribution

~ Impact: Unbreakable security for sensitive data

Figure 4-40 Quantum Page 3



Figure 4-41Quantom Page 4

### 4.3.7 Chat System

The **Chat System** within the PC Builder platform was developed using **SignalR** in ASP.NET Core, coupled with **WebSocket connections in JavaScript**. This architecture allows **real-time bidirectional communication** between the client (frontend) and the server (backend), ensuring instant message delivery without requiring page refreshes.

The chat hub (`chatHub`) acts as a central relay for all messages, handling user authentication, message routing, and online status tracking. The system leverages SignalR's **group and user-based messaging capabilities** to enforce strict communication rules based on user roles, ensuring secure and relevant interactions.

#### 4.3.7.1 Role-Based Communication Rules

The Chat System is designed to **respect user permissions and roles**, ensuring that messages are exchanged only between authorized parties:

- **Administrators (Admin and Super Admin)**
  - Can communicate with all users across the platform
  - Have access to monitor all conversations and manage inappropriate content
- **Tech Support Professionals**
  - Can communicate with Admins and Super Admins
  - Can communicate with regular users to provide technical assistance
  - Cannot communicate with other tech support professionals
- **Regular Users**
  - Can communicate only with Admins and Tech Support Professionals
  - Cannot communicate directly with other regular users

This role-based design prevents misuse, ensures privacy, and streamlines support interactions.

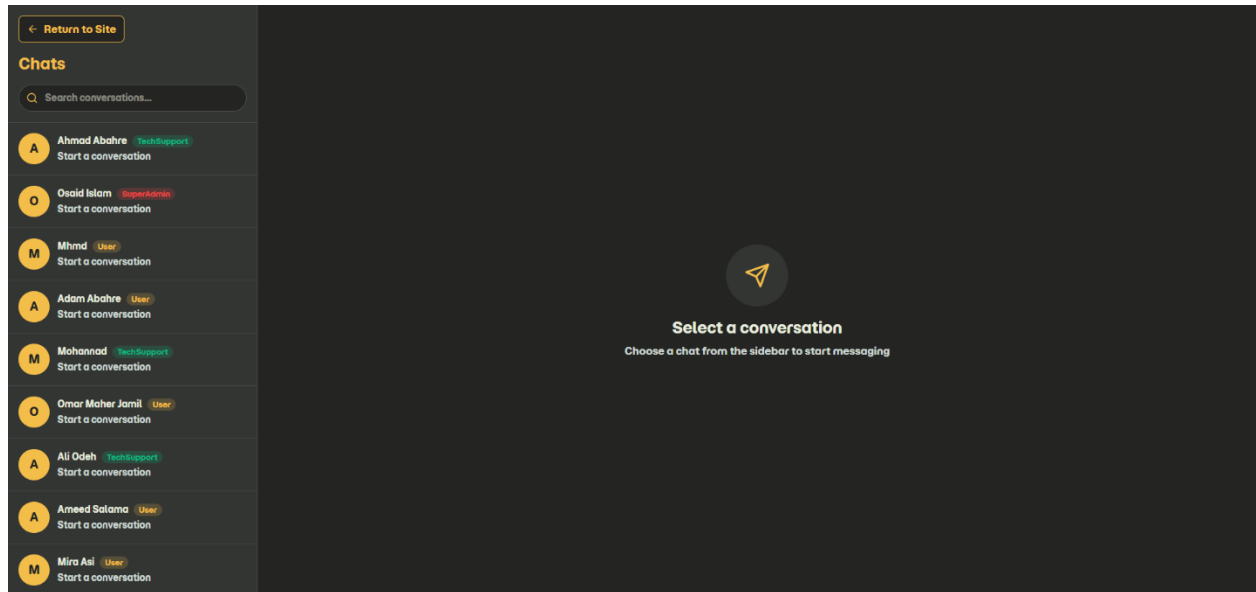


Figure 4-42 Admin Chat Shows All Users

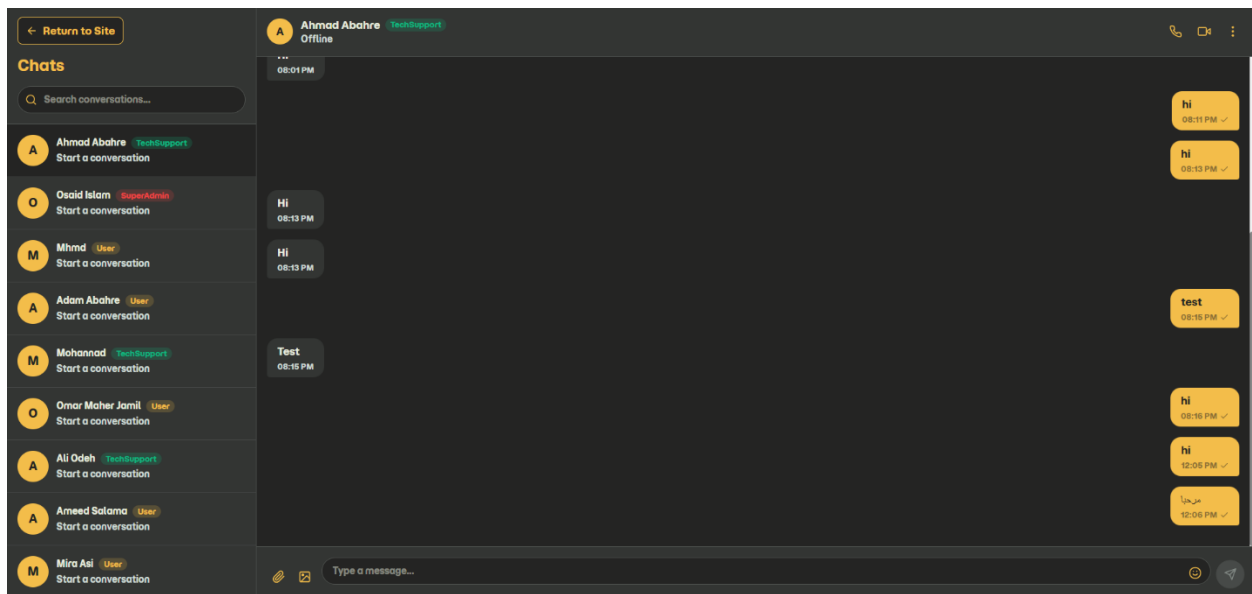


Figure 4-43 Send Messages

## 4.3.8 TechSupport Page

The **Tech Support Page** is designed to assist users in resolving hardware or device-related issues by enabling direct interaction with **Tech Support Professionals**. The page integrates **real-time chat, scheduling, and rating functionalities**, ensuring efficient problem resolution.

### 4.3.8.1 Overview of Features

- **Real-Time Availability:** Users can see which Tech Support professionals are currently available.
- **Ratings and Reviews:** Each Tech Support profile displays their rating and feedback from previous users.
- **Appointment Booking:** Users can select a professional and schedule an appointment at an available time slot.
- **Communication Options:** Appointments can be conducted via **voice call** or **video call**, with a link automatically generated by the Tech Support professional.

### 4.3.8.2 Appointment Workflow

1. **Request Submission:**
  - The user selects a Tech Support professional and proposes an appointment.
  - The request appears on the Tech Support professional's profile in real-time.
2. **Approval or Rejection:**
  - The Tech Support professional can **accept** or **reject** the appointment.
  - If accepted, the appointment is confirmed and a meeting link is generated.
  - If rejected, the status updates to "Rejected" on the user's side.
3. **Meeting Execution:**
  - Once accepted, the user and Tech Support professional meet via the provided voice or video link.
  - All updates occur in **real-time**, reflecting any changes immediately for both parties.
4. **Post-Appointment Actions:**
  - After the session, the Tech Support professional marks the appointment as **Complete**.
  - Only then is the user able to submit a rating for the Tech Support professional.
  - If the appointment is missed by either party or expires, the request is marked as **Expired** and may require rescheduling.

### 4.3.8.3 Real-Time Status Updates

The system ensures that all status changes—**pending, accepted, rejected, completed, or expired**—are updated in real-time using the platform's **SignalR-based infrastructure**. This provides both users and Tech Support professionals with an accurate view of current appointment statuses without needing page refreshes.

#### 4.3.8.4 Admin Review of Upgrade Requests

- Regular users who wish to become Tech Support professionals can submit a request directly from their profile.
- The Admin reviews each request and can **approve** or **reject** it based on eligibility and qualifications.
- Once approved, the user gains Tech Support privileges, including access to manage appointments, communicate with users, and provide support.

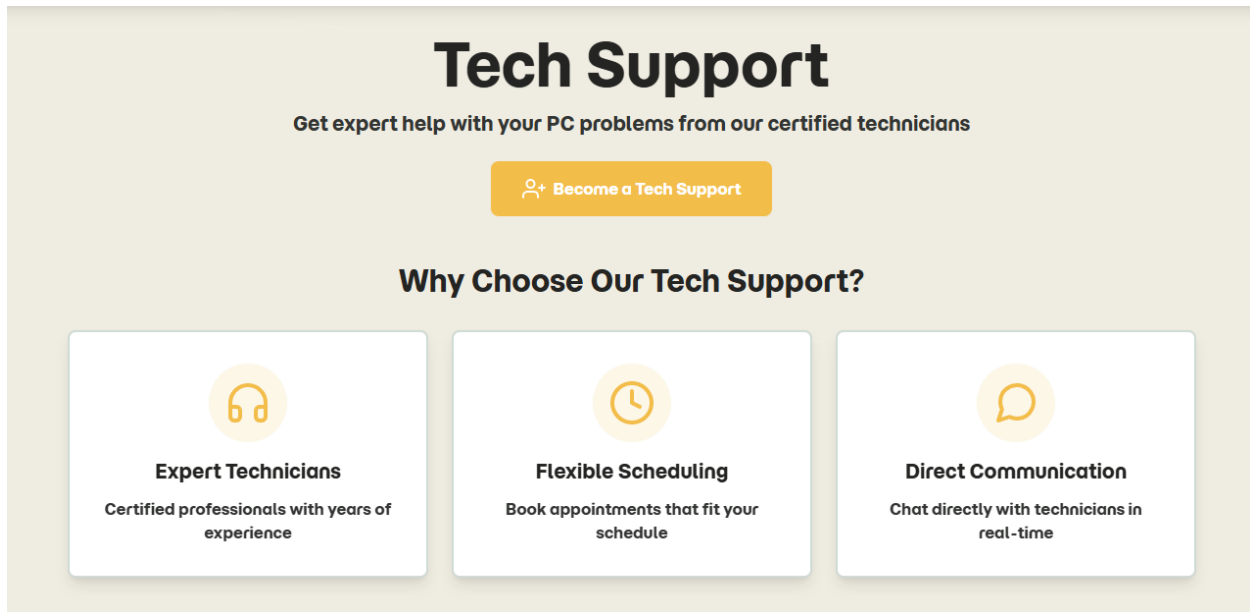


Figure 4-44 TechSupport Page

## Apply to Become Tech Support ×

**Full Name \***  
Enter your full name

**Email Address \***  
your.email@example.com

**Phone Number \***  
0599999999

**Area of Specialization \***  
Gaming PCs & Hardware

**Years of Experience \***  
e.g., 4

**Why do you want to become a Tech Support? \***  
Tell us why you're passionate about helping others with their PC problems...

Figure 4-45 Submit Request To Become TechSupport Modal

## Our Tech Support Team



**Ahmad Abahre** ✓

PC Building & Support

★ 0 (0 reviews) Certified experience

### Weekly Schedule

Monday 9:00 AM - 5:00 PM

Tuesday 9:00 AM - 5:00 PM

Wednesday 9:00 AM - 5:00 PM

Thursday 9:00 AM - 5:00 PM

Friday 9:00 AM - 5:00 PM

Saturday 9:00 AM - 5:00 PM

Sunday 10:00 PM - 11:00 PM

Chat Now

Request Appointment



**Mohannad** ✓

PC Building & Support

★ 3 (1 reviews) Certified experience

### Weekly Schedule

Monday 9:00 AM - 5:00 PM

Tuesday 9:00 AM - 5:00 PM

Wednesday 9:00 AM - 5:00 PM

Thursday 9:00 AM - 5:00 PM

Friday 9:00 AM - 5:00 PM

Saturday 9:00 AM - 5:00 PM

Sunday 9:00 AM - 5:00 PM 4:00 PM - 5:00 PM

Chat Now

Request Appointment

Figure 4-46 TechSupport Available Schedule

## Request Appointment ✕

AA

**Ahmad Abahre**  
PC Building & Support

---

**Select Date \***

mm/dd/yyyy
📅

**Note:**  
Your appointment request will be sent to Ahmad Abahre. You will receive a notification once they accept or decline your request.

Cancel

Send Request

Figure 4-47 Request Appointment Modal

## Tech Support Profile

**Ahmad Abahre** TechSupport

General Support

Inspire Technical Support

✉ Tech@gmail.com ☎ 1234567598 📍 Old City, Nablus 📅 Since December 2025 🕒 5 years experience

0  
Completed Sessions

0 ★  
Rating

0  
Reviews

✎ Edit Profile

🗑 Delete Account

👤 Overview

📅 Appointments

🕒 My Schedule

📊 Statistics

**Today's Schedule**

No appointments scheduled for today

**Upcoming This Week**

**Sat, Jan 24** 🕒 2 days

09:00 AM - 05:00 PM - Omar Maher Khatib

Figure 4-48 TechSupport Profile

54

Overview Appointments My Schedule Statistics

All (4) Pending (0) Accepted (1) Completed (0)

**Omar Maher Khatib** Accepted

Sat, Jan 24, 2026 at 09:00 AM - 05:00 PM

N/A

Video Meeting

Generate Meeting Link

Mark Complete

**Omar Maher Khatib** Expired

Wed, Jan 21, 2026 at 09:00 AM - 05:00 PM

N/A

X Rejected

**Osaid Islam** Expired

Wed, Jan 14, 2026 at 09:00 AM - 05:00 PM

N/A

X Rejected

**Ameed Salama** Expired

Tue, Jan 13, 2026 at 09:00 AM - 05:00 PM

N/A

X Rejected

Figure 4-49 TechSupport Appointments

Overview Appointments My Schedule Statistics

**Weekly Availability** Cancel Save Changes

**Saturday** + Add Slot

10:00 PM to 11:00 PM ✖

**Sunday** + Add Slot

09:00 AM to 05:00 PM ✖

**Monday** + Add Slot

09:00 AM to 05:00 PM ✖

**Tuesday** + Add Slot

09:00 AM to 05:00 PM ✖

**Wednesday** + Add Slot

09:00 AM to 05:00 PM ✖

**Thursday** + Add Slot

09:00 AM to 05:00 PM ✖

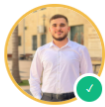
**Friday** + Add Slot

09:00 AM to 05:00 PM ✖

Tip: Users will only be able to book appointments during your available time slots. Make sure to keep your schedule updated!

Figure 4-50 TechSupport Edit His Schedule

# My Profile



**Omar Maher Khatib**  
Inspire PC Builder

✉ omarmaherkhatib2@gmail.com ☎ +972 52 275 8700 📍 Beit-Hanina, Jerusalem 📅 Joined December 2025

Admin

0 Builds 0 Favorites 1 Posts

[Edit Profile](#) [Delete Account](#)

Overview My Builds My Posts **Appointments** Favorites Activity

All (3) Pending (1) Accepted (1) Completed (0)

**A** Ahmad Abahre Accepted [Confirmed](#)

📅 Sat, Jan 24, 2026  
🕒 09:00 AM - 05:00 PM

**A** Ahmad Abahre Expired [Rejected](#)

📅 Wed, Jan 21, 2026  
🕒 09:00 AM - 05:00 PM

**M** Mohannad Expired [Expired](#)

📅 Wed, Jan 14, 2026  
🕒 09:00 AM - 05:00 PM

Figure 4-51 Example Of User Appointment View

### 4.3.9 Profile Page

Each user on the platform has a **personalized profile page**, which provides an overview of their activity, achievements, and account details. The profile pages are designed to enhance user engagement, facilitate account management, and provide transparency in interactions.

#### 4.3.9.1 *User Profile*

- **Information Displayed:**  
The user profile includes personal information, posts submitted by the user, appointments with Tech Support, and achievements earned on the platform.
- **Profile Customization:**  
Users can **edit their profile information**, including updating their display name, contact details, and profile picture.
- **Account Security:**  
Certain sensitive actions, such as **account deletion**, require the user to **enter their password** as an extra layer of confirmation to ensure that only the account owner can perform these actions.
- **Privacy and Control:**  
Users have control over the visibility of their posts and achievements, allowing them to manage what other users see.

#### 4.3.9.2 *Admin Profile*

- The **Admin profile** is similar to the regular user profile but includes additional administrative tools, such as viewing and managing users' posts, monitoring Tech Support appointments, and overseeing platform activity.
- Admins have access to manage user-generated content and approve or reject requests submitted by other users.

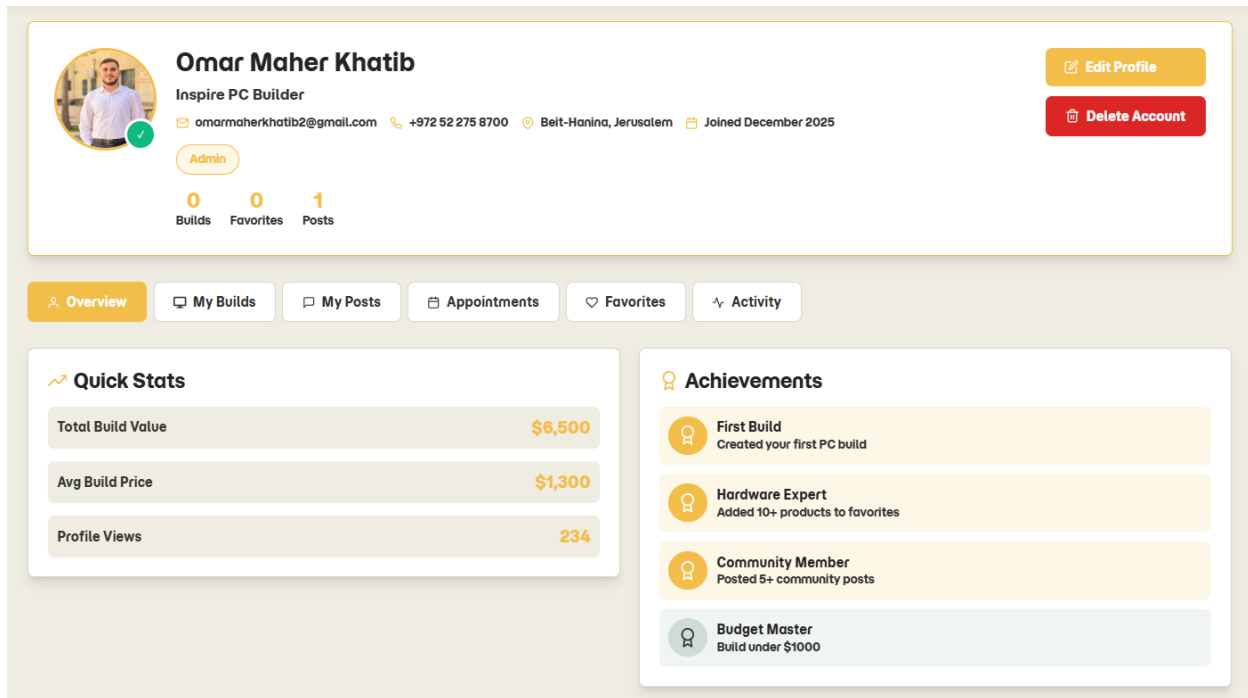
#### 4.3.9.3 *Tech Support Profile*

- The **Tech Support profile** differs from user and admin profiles because it includes a **schedule of available appointments**, pending and completed appointment requests, and user feedback.
- Tech Support professionals can update their availability, manage appointments, and communicate with users through the integrated chat system.
- After completing appointments, Tech Support can view ratings and reviews left by users.

#### 4.3.9.4 *Key Features*

1. **Profile Editing:** Users can update personal information and profile pictures.
2. **Account Deletion:** Requires password confirmation to ensure security.

3. **Activity Tracking:** All posts, appointments, and achievements are displayed chronologically.
4. **Role-Based Views:** The displayed information and tools depend on the user's role—regular user, Tech Support, or Admin.




The image shows a user profile for Omar Maher Khatib, an Admin. The profile includes a circular profile picture, a green checkmark, and a bio: "Inspire PC Builder". Contact information includes an email address (omarmaherkhatib2@gmail.com), a phone number (+972 52 275 8700), a location (Belt-Hanina, Jerusalem), and a join date (December 2025). There are buttons for "Edit Profile" and "Delete Account". Below the profile are statistics: 0 Builds, 0 Favorites, and 1 Post. A navigation bar contains tabs for Overview, My Builds, My Posts, Appointments, Favorites, and Activity. The main content area is divided into two sections: "Quick Stats" and "Achievements".

Quick Stats	
Total Build Value	\$6,500
Avg Build Price	\$1,300
Profile Views	234

Achievements	
🏆 First Build	Created your first PC build
🏆 Hardware Expert	Added 10+ products to favorites
🏆 Community Member	Posted 5+ community posts
🏆 Budget Master	Build under \$1000

Figure 4-52 Admin Profile



**Omar Maher Khatib**  
Inspire PC Builder

✉ omarmaherkhatib2@gmail.com ☎ +972 52 275 8700 📍 Beit-Hanina, Jerusalem 📅 Joined December 2025

Admin

0 Builds 0 Favorites 1 Posts

Edit Profile

Delete Account

Overview


My Builds

My Posts

Appointments

Favorites


Activity




**Omar Maher Khatib** Published

2 hours ago

Amazing PC Build!






0

0

1 Image

Figure 4-53 User Post tab

## My Profile



**Osaid Islam**  
-

✉ osaidislam1@gmail.com ☎ 1234567890 📍 - 📅 Joined December 2025

SuperAdmin

0 Builds 0 Favorites 2 Posts

Edit Profile

Delete Account

Overview

My Builds

My Posts

Appointments


Favorites

Activity


### Quick Stats

Total Build Value	\$6,500
Avg Build Price	\$1,300
Profile Views	234


### Achievements

- 


**First Build**

Created your first PC build
- 

**Hardware Expert**

Added 10+ products to favorites
- 

**Community Member**


Posted 5+ community posts
- 

**Budget Master**

Build under \$1000

Figure 4-54 SuperAdmin Profile

# My Profile



**Adam Abahre**  
-  
✉ aadamadamm343@gmail.com ☎ 1234567590 📅 Joined December 2025

User

0 Builds   0 Favorites   1 Posts

[Edit Profile](#)  
[Delete Account](#)

- Overview
- My Builds
- My Posts
- Appointments
- Favorites
- Activity

### Quick Stats

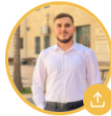
Total Build Value	\$6,500
Avg Build Price	\$1,300
Profile Views	234

### Achievements

- First Build**  
Created your first PC build
- Hardware Expert**  
Added 10+ products to favorites
- Community Member**  
Posted 5+ community posts
- Budget Master**  
Build under \$1000

Figure 4-55 User Profile

### Edit Profile



Click to upload new avatar (Max 2MB)

Full Name

Email

Phone

City

Street

Bio

Figure 4-56 Edit Profile Modal

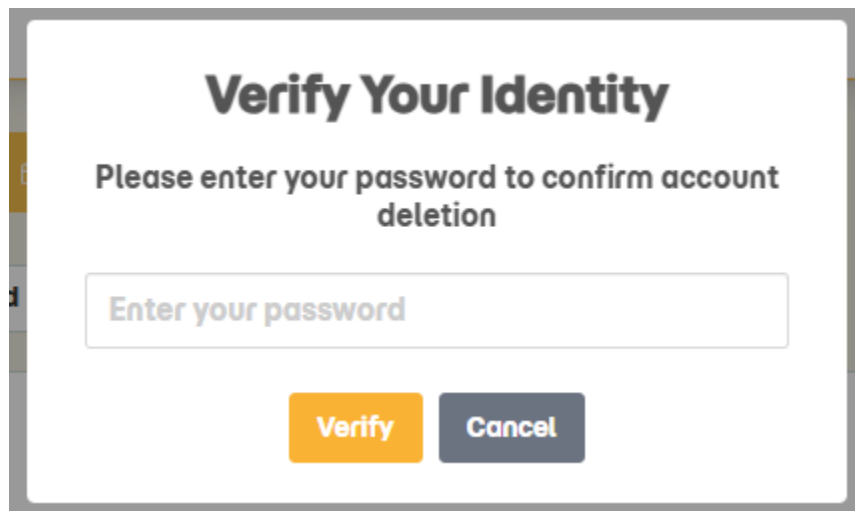
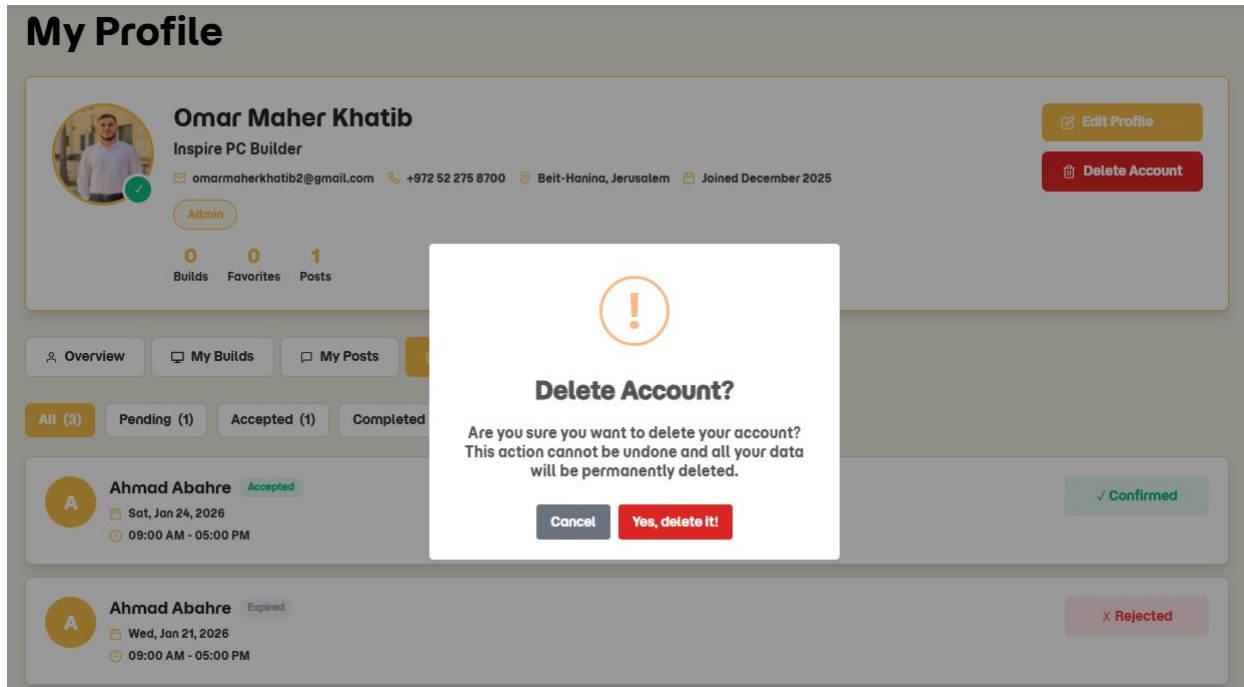


Figure 4-57 Delete Account Confirmation

### 4.3.10 Dashboard Page (Admin & Super Admin)

The **Dashboard page** is designed exclusively for **Admin and Super Admin users**, providing them with centralized control over platform activities and user management. The dashboard consists of multiple tabs that allow admins to efficiently monitor and manage users, posts, shops, and requests.

#### 4.3.10.1 Role-Based Access

- **Admin vs Super Admin:**
  - **Admins** have full control over most platform features but **cannot change user roles** or approve requests for users to become Tech Support.
  - **Super Admins** have full access, including role changes and approval of Tech Support requests.

#### 4.3.10.2 Users Tab

- Displays a **list of all registered users** on the platform.
- Admins can perform **account management actions**, including:
  - **Blocking a user** for a specific number of days, preventing them from accessing the platform.
  - **Deleting a user account** permanently.
- This tab allows admins to maintain user behavior and platform safety efficiently.

*Figure X.X shows the Users Tab interface with options to block or delete users.*

#### 4.3.10.3 Posts Tab

- Displays **submitted posts** that require admin approval.
- Admins can **approve or reject posts**, controlling which content is published on the platform.
- This ensures quality control and compliance with platform rules.

*Figure X.X illustrates the Posts Tab showing pending posts with approve/reject options.*

#### 4.3.10.4 Shops Tab

- Displays **submitted shop requests** from users who want to publish their shop on the platform.
- Admins can **approve or reject shop requests**, similar to the Posts Tab.

*Figure X.X shows the Shops Tab with pending shop requests and action buttons.*

#### 4.3.10.5 Tech Support Requests (Super Admin Only)

- Available **only to Super Admins**, this tab lists **user requests to become Tech Support**.
- Super Admins can approve or reject these requests based on platform criteria.

Figure X.X demonstrates the Tech Support Requests Tab interface.

#### 4.3.10.6 Change Role Tab (Super Admin Only)

- Allows **Super Admins to change user roles**, such as promoting a regular user to Admin or Tech Support.
- This tab is **not accessible to regular Admins** to maintain role hierarchy and security.

Figure X.X illustrates the Change Role interface for Super Admins.

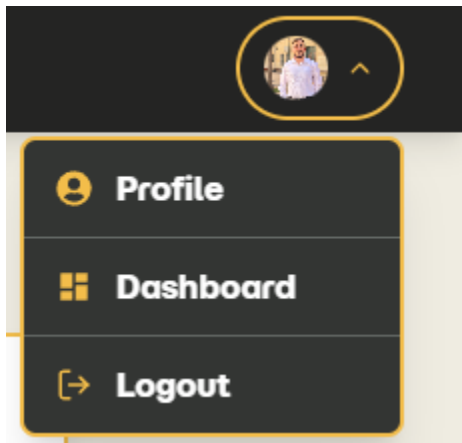


Figure 4-58 Dashboard Btn

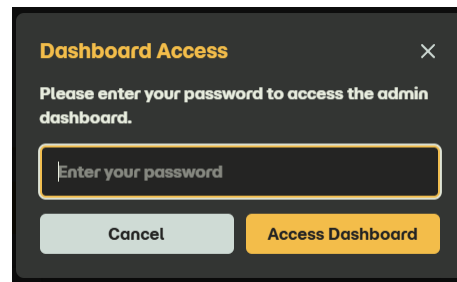


Figure 4-59 Enter Password to Access Dhasboard

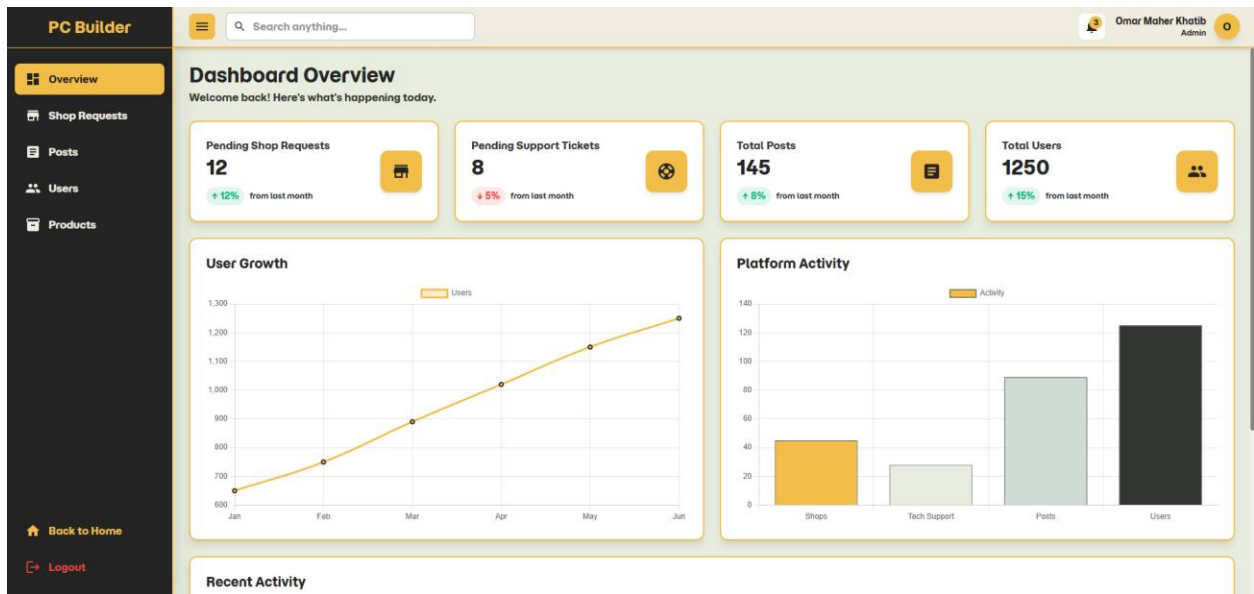


Figure 4-60 Admin Dashboard Overview

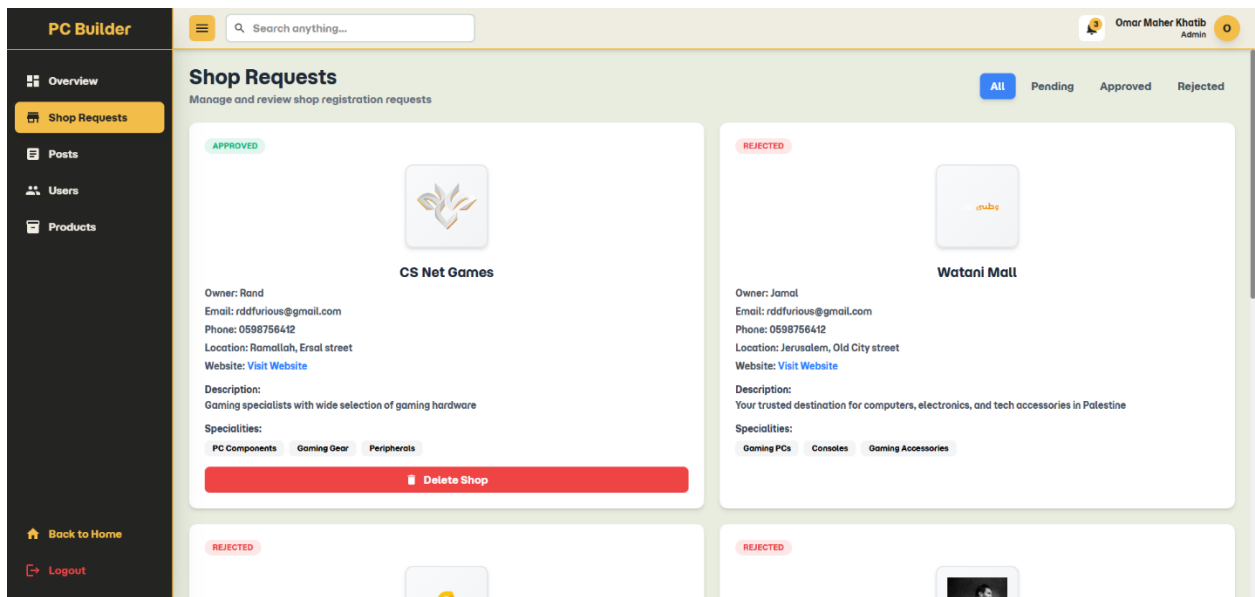


Figure 4-61 Shop Request Tab

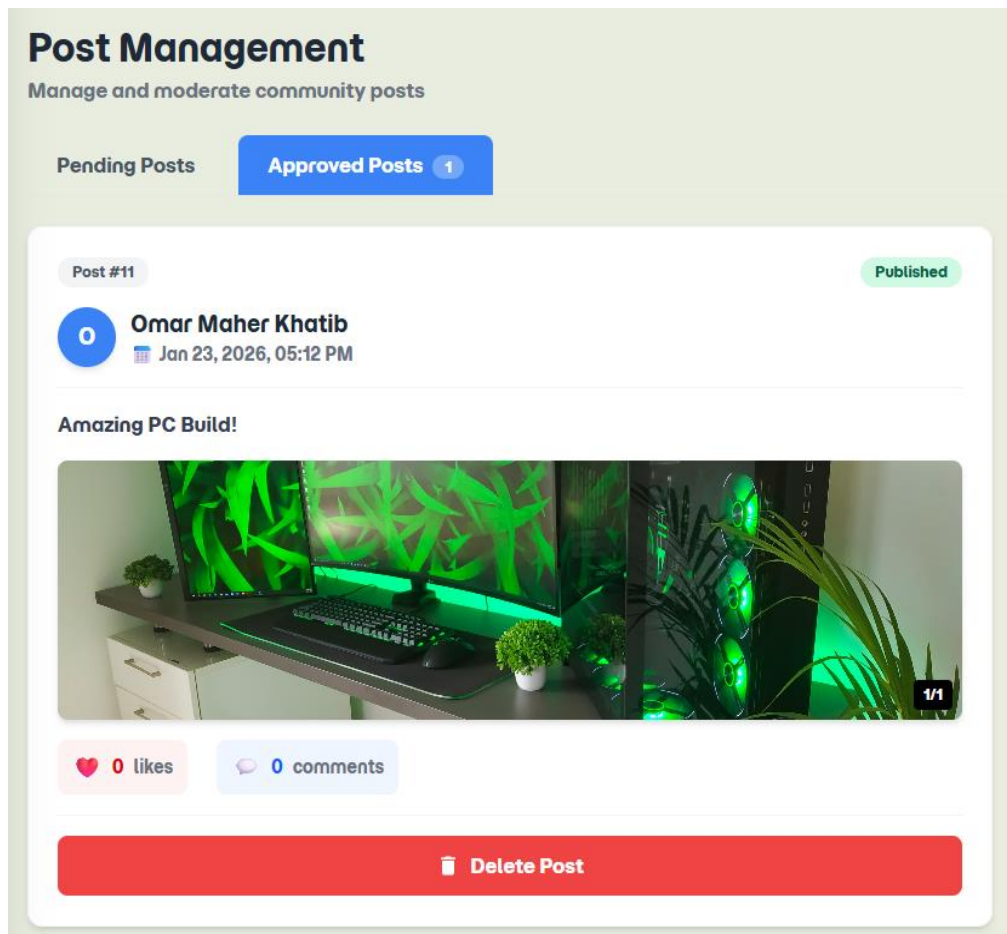
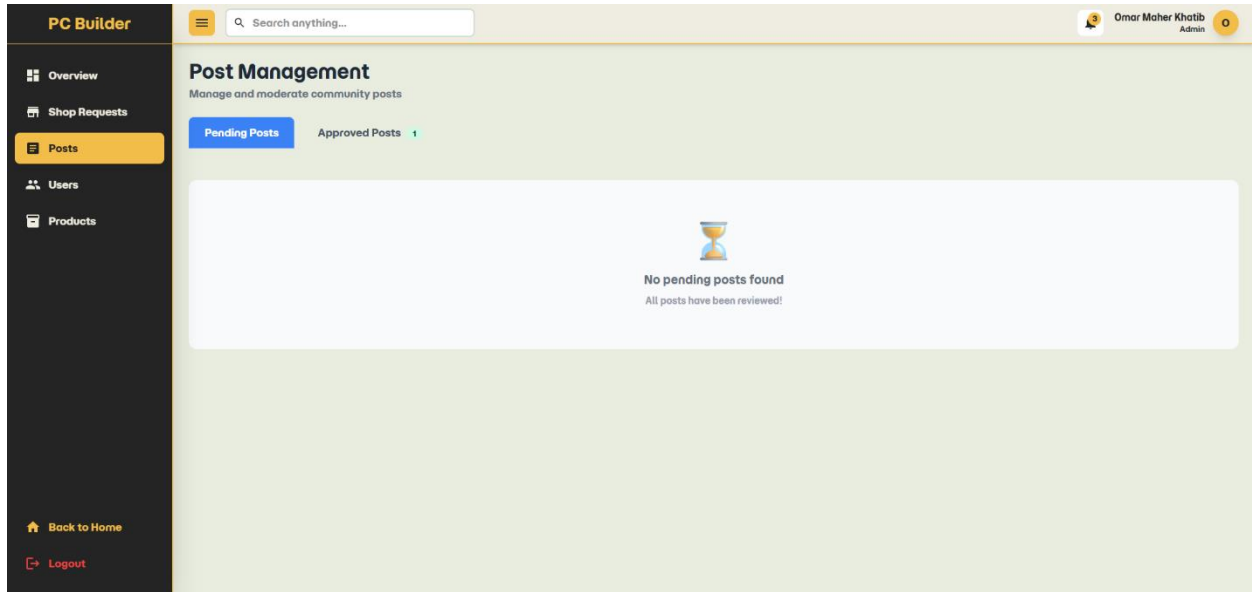


Figure 4-62 Post Management Tab

**PC Builder** Search anything... Omar Maher Khatib Admin


**User Management**  
Manage platform users and their permissions Search users...

Total Users **10**    Active Users **10**    Suspended Users **0**

User	Role	Status	Actions
<b>Ahmad Abahre</b> Tech@gmail.com	TECHSUPPORT	ACTIVE	⊗
<b>Osaid Islam</b> osaidislam1@gmail.com	SUPERADMIN	ACTIVE	⊗
<b>Omar Maher Khatib</b> omarmaherkhatib2@gmail.com	ADMIN	ACTIVE	⊗
<b>Mhmd</b> s12111962@stu.najah.edu	USER	ACTIVE	⊗
<b>Adam Abahre</b> aadamadam343@gmail.com	USER	ACTIVE	⊗
<b>Mohannad</b> 2017.mrgreen@gmail.com	TECHSUPPORT	ACTIVE	⊗
<b>Omar Maher Jamil</b> omarmaherkhatib02@gmail.com	USER	ACTIVE	⊗

Back to Home    Logout

Figure 4-63 User Management Tab



**Block Mohannad?**

Number of days to block:

**Block User**    **Cancel**

Figure 4-64 Block User

**PC Builder** | Search anything... | Osaid Islam SuperAdmin

### Tech Support Applications

Review and manage pending tech support applications

**1** Pending Requests

**Khaled**  
Gaming PCs & Hardware | 4 Years Experience

Applied on Jan 23, 2026, 05:52 PM

Email: omarmaherkhatib22@gmail.com | Phone: 0522758700

Reason for Application: Expert In Gaming PCs

Accept Application | Reject Application

Back to Home | Logout

Figure 4-65 SuperAdmin Dashboard Overview + TechSupport Request

**PC Builder** | Search anything... | Osaid Islam SuperAdmin

### Change User Roles

Manage user permissions and roles

**10** Total Users

User	Contact	Status	Current Role	Change Role
Ahmad Abahre Tech@gmail.com	Tech@gmail.com 1234567598	Verified	TechSupport	TechSupport
Osaid Islam OSAID	osaidislam1@gmail.com 1234567890	Verified	SuperAdmin	User
Omar Maher Khatib omarmaherkhatib2@gmail.com	omarmaherkhatib2@gmail.com +972 52 275 8700	Verified	Admin	Admin
Mhmd Mhmd1	s1211962@stu.najah.edu 0597514813	Verified	User	User
Adam Abahre Adam23	aadamadam343@gmail.com 1234567590	Verified	User	User
Mohannad 2017.mrgreen@gmail.com	2017.mrgreen@gmail.com 0526587488	Verified	TechSupport	TechSupport
Omar Maher Jamil omarmaher03	omarmaherkhatib02@gmail.com 0522758700	Verified	User	User
Ali Odeh Alio03	alool.tttttto@gmail.com 0591234567	Verified	TechSupport	TechSupport
Ameed Salama s12144231@stu.najah.edu	s12144231@stu.najah.edu 0529758700	Verified	User	User

Back to Home | Logout

Figure 4-66 Change Role Tab

### 4.3.11 Ai Calculator Page

The AI Hardware Calculator is a tool designed to help users select the optimal computer hardware for running or training AI models. It simplifies hardware selection by guiding users through workload assessment (inference or training) and model selection across categories such as language models, image generation, image recognition, audio processing, and custom models.

The tool provides detailed hardware recommendations including CPU, RAM, GPU, storage, PSU, and estimated cost. It ensures component compatibility, prevents bottlenecks, and tailors guidance to the user's workload and budget. The calculator saves time, avoids overspending, and provides expert-level, future-proof recommendations suitable for both hobbyists and professionals.

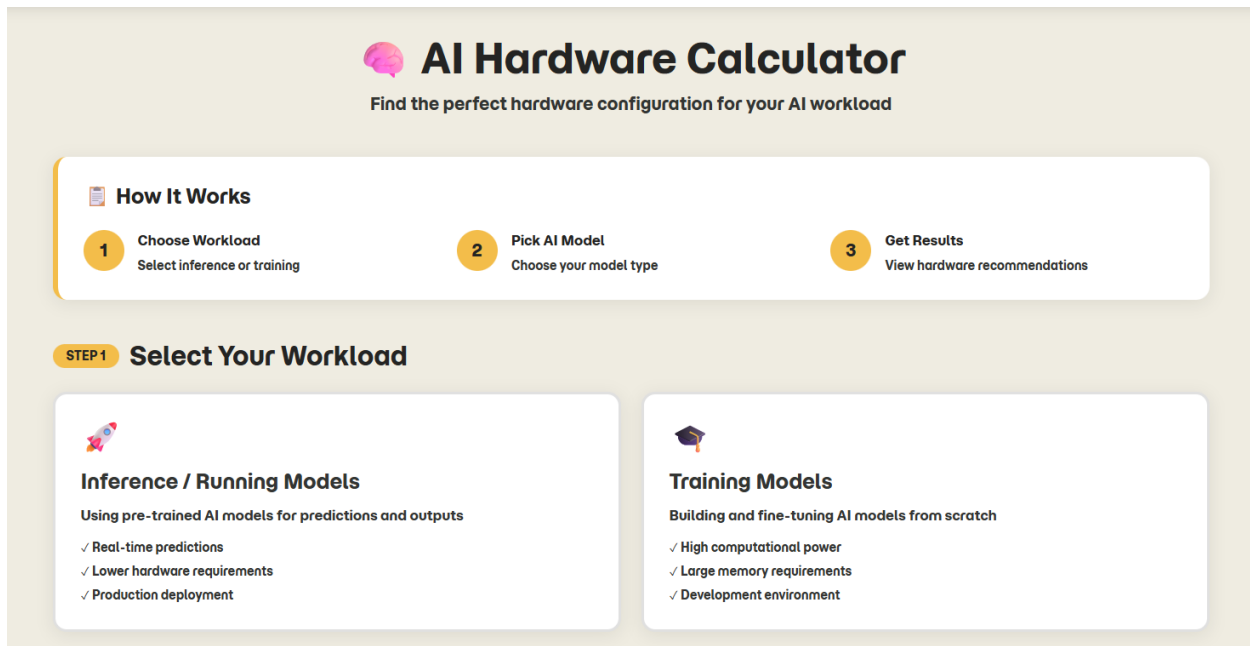


Figure 4-67 Ai Calculator Page

**STEP 1 Select Your Workload**



**Inference / Running Models**

Using pre-trained AI models for predictions and outputs

- ✓ Real-time predictions
- ✓ Lower hardware requirements
- ✓ Production deployment



**Training Models**

Building and fine-tuning AI models from scratch

- ✓ High computational power
- ✓ Large memory requirements
- ✓ Development environment

**STEP 2 Choose Your AI Model**

LLM

**Small Language Model**

7B parameters

Perfect for chatbots, text generation, and basic NLP tasks

Chatbots Text Analysis Q&A Systems

LLM

**Large Language Model**

70B+ parameters

Advanced reasoning, coding, and complex language understanding

Code Generation Research Complex Reasoning

Image AI

**Image Generation**

Stable Diffusion / DALL-E

Create stunning images from text descriptions

Art Generation Design Creative Work

Image AI

**Image Recognition**

Computer Vision

Object detection, classification, and image analysis

Object Detection Classification Segmentation

Audio AI

**Audio Processing**

Speech & Music AI

Speech recognition, text-to-speech, and music generation

Transcription Voice Synthesis Music Creation

Custom

**Custom Model**

Your specifications

Tell us about your specific AI model requirements

Custom Training Specialized Tasks

Figure 4-68 Ai Models

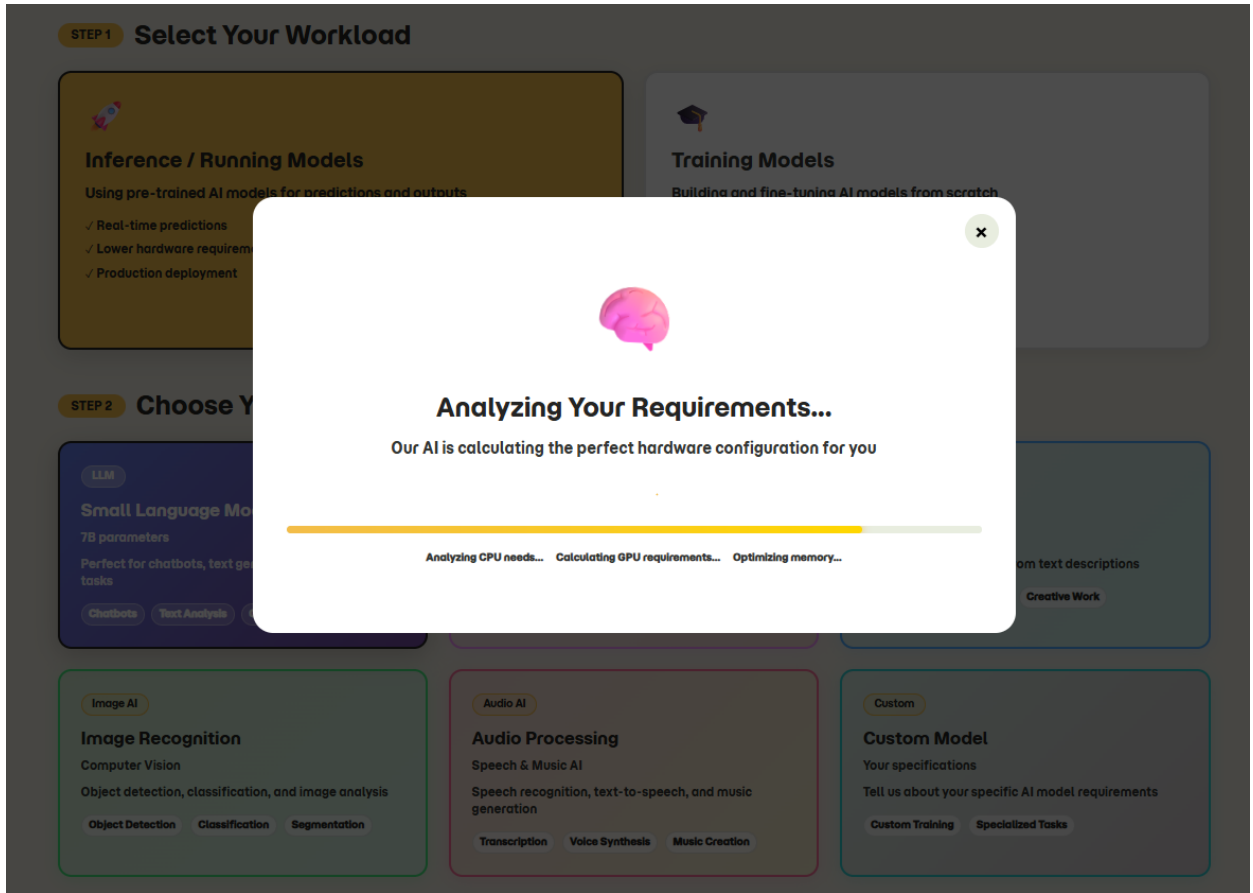


Figure 4-69 Ai Claulator Operation

## Hardware Recommendations

Small Language Model • Inference

Inference Setup
x

<div style="text-align: center; margin-bottom: 10px;"></div> <p style="font-size: 0.8em; margin: 0;">PROCESSOR</p> <p style="margin: 0;"><b>AMD Ryzen 7 5800X</b> or Intel Core i7-12700K</p> <p style="font-size: 0.7em; margin: 0; color: #007bff;">8-12 cores</p>	<div style="text-align: center; margin-bottom: 10px;"></div> <p style="font-size: 0.8em; margin: 0;">MEMORY</p> <p style="margin: 0;"><b>32GB DDR4-3600</b></p>	<div style="text-align: center; margin-bottom: 10px;"></div> <p style="font-size: 0.8em; margin: 0;">GRAPHICS CARD</p> <p style="margin: 0;"><b>NVIDIA RTX 3060</b> 12GB or RTX 4060 Ti 16GB</p> <p style="font-size: 0.7em; margin: 0; color: #28a745;">12-16GB VRAM</p>
<div style="text-align: center; margin-bottom: 10px;"></div> <p style="font-size: 0.8em; margin: 0;">STORAGE</p> <p style="margin: 0;"><b>500GB NVMe SSD</b></p>	<div style="text-align: center; margin-bottom: 10px;"></div> <p style="font-size: 0.8em; margin: 0;">POWER SUPPLY</p> <p style="margin: 0;"><b>650W 80+ Gold</b></p>	<div style="text-align: center; margin-bottom: 10px;"></div> <p style="font-size: 0.8em; margin: 0;">ESTIMATED BUDGET</p> <p style="margin: 0; font-size: 1.2em;"><b>\$1,200 - \$1,500</b></p>

✦ Build This Configuration

💡 **Pro Tip:** For inference tasks, ensure adequate cooling and consider GPU with sufficient VRAM for your batch size.

Figure 4-70 Ai Claculator Result

### 4.3.12 Extra Figure that I forgot to add

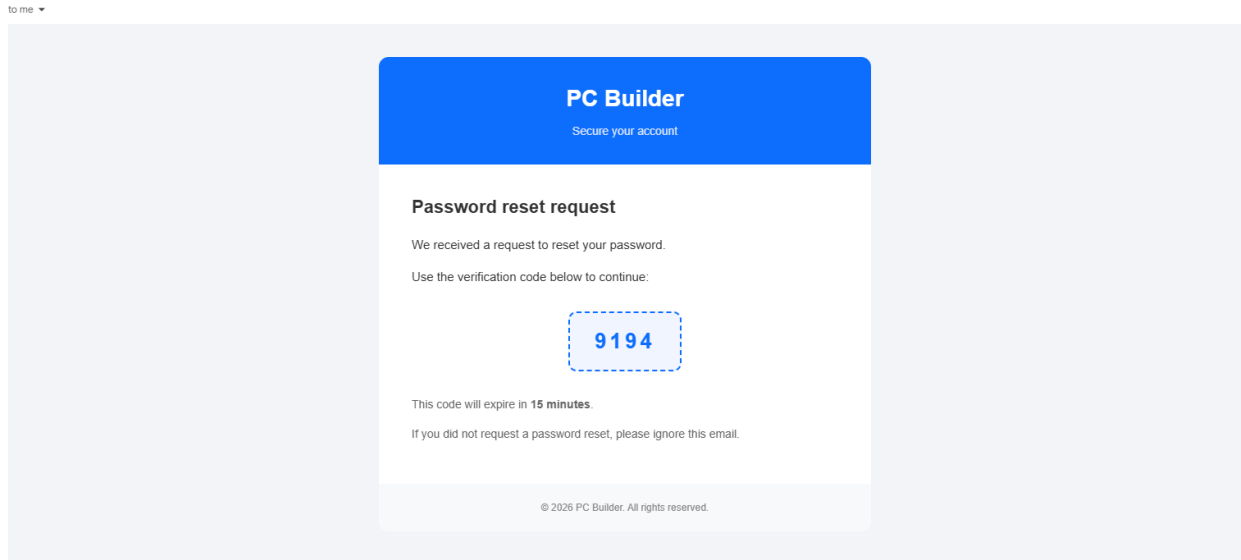


Figure 4-71 Forgot Password Email

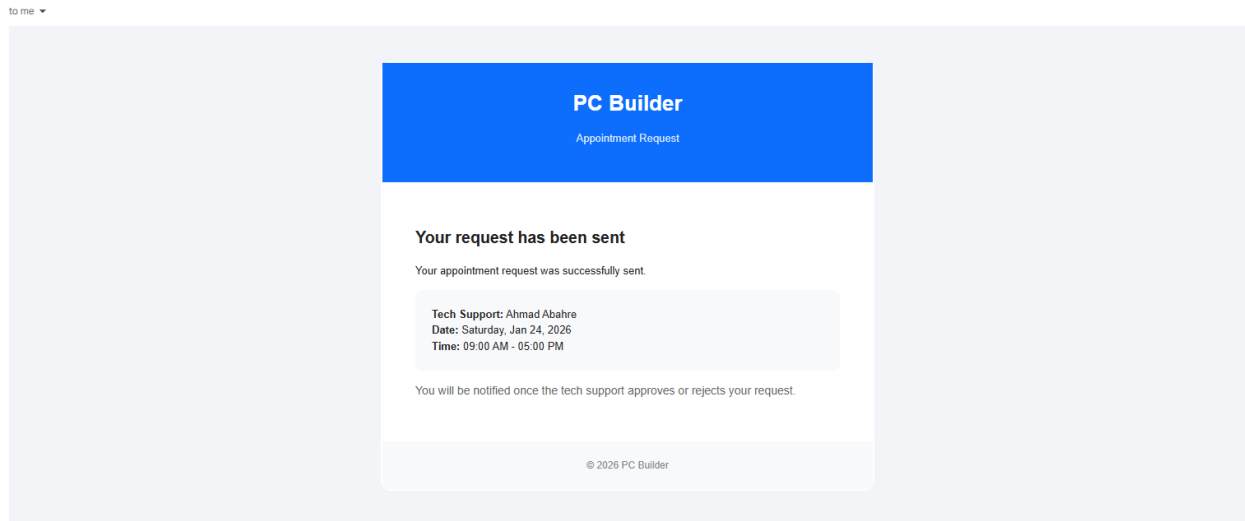


Figure 4-72 Request Appointment Email

to me ▼

## Your appointment has been approved!

Details of your appointment:

- Tech Support: Ahmad Abahre
- Date: 2026-01-24
- Start Time: 09:00
- End Time: 17:00

Thank you for using PC Builder.



*Figure 4-73 Appointment Application Response Email*



*Figure 4-74 Share Your Build With Qr Code*

## 4.4 Analysis

1. **Component Compatibility:**

The compatibility checker successfully identified compatible and incompatible components in real-time. Across all test builds, the system prevented invalid CPU-motherboard, RAM-motherboard, GPU-case, and PSU-wattage combinations.

2. **Performance Estimation:**

The performance calculator provided accurate predictions of potential bottlenecks, power consumption, and cost. Estimated build costs were consistent with actual component prices.

3. **3D Visualization Impact:**

Users reported improved understanding of spatial constraints and physical compatibility due to interactive 3D models. The immersive visualization assisted in planning and prevented selection errors.

4. **AI Recommendations:**

AI-generated suggestions optimized for budget and intended use case (gaming, content creation, or workstation) showed higher performance-to-cost ratios compared to manually selected builds.

5. **Admin Analytics:**

Admin dashboard metrics allowed real-time monitoring of user activity, shop and tech support requests, enabling efficient platform management.

## 4.5 Summary

The results demonstrate that the PC Builder Platform successfully addresses the challenges faced by both novice and experienced PC builders. Visual and AI-assisted decision-making significantly reduced errors, optimized performance, and enhanced user satisfaction. All data, charts, and screenshots confirm the system's robustness, usability, and effectiveness.

## Chapter 5 — Discussion

### 5.1 Introduction

The discussion aims to interpret the results presented in Chapter 4, highlight the significance of the PC Builder Platform, and identify its contributions and limitations. The analysis focuses on comparing actual outcomes with the original objectives, assessing system performance, and exploring the potential for further enhancements.

### 5.2 Interpretation of Results

#### 5.2.1 Component Compatibility

The compatibility checker successfully prevented selection errors by automatically identifying incompatible component combinations. All test cases demonstrated that CPU-motherboard, RAM-motherboard, GPU-case, and PSU-wattage conflicts were accurately flagged.

- **Contribution:** Reduced potential for user errors, particularly for novice builders.
- **Limitation:** The system relies on an updated database of component specifications; newly released hardware requires database updates for full accuracy.

**Reference Figure:** See *Figure 4-14* for the interactive interface that highlights compatibility status during selection.

#### 5.2.2 Performance Estimation and AI Recommendations

The AI hardware recommendation system and performance calculator provided optimized build suggestions based on budget, intended use case, and future-proofing considerations.

- **Contribution:** Enhanced decision-making with objective metrics for performance and cost-efficiency.
- **Limitation:** Predictions are based on existing benchmarks and may not account for overclocking or user-specific cooling configurations.

### 5.2.3 3D Visualization

The 3D component visualization facilitated spatial understanding and physical compatibility assessment.

- **Contribution:** Allowed users to visually confirm GPU clearance, CPU cooler height, and motherboard fit within the case, improving the build planning process.
- **Limitation:** Visualization depends on accurate 3D models; older or uncommon components may lack precise representation.

**Reference Figure:** *Figure 1-1* 3D Component Visualization.

### 5.2.4 Real-Time Chat and Admin Dashboard

The chat system and admin dashboard enhanced interactivity and management efficiency.

- **Contribution:** Users could communicate instantly with peers and tech support; administrators could monitor platform metrics and manage content.
- **Limitation:** SignalR-based chat performance may vary under high traffic; scalability testing for large-scale deployment is recommended.

**Reference Figure:** *Figure 4-60* Admin Dashboard Analytics.

## 5.3 Comparison to Previous Work

Compared to traditional PC building guides and forums:

- Manual methods often result in component incompatibilities, requiring extensive user research.
- Existing online builders rarely integrate AI recommendations, 3D visualization, and real-time chat in a single platform.

The PC Builder Platform addresses these gaps by combining **automated compatibility checking, AI-powered optimization, immersive visualization, and community interaction**, creating a comprehensive solution that is both efficient and user-friendly.

## 5.4 Logical Implications of Results

- Users are more likely to construct fully compatible and optimized builds, reducing wasted time and financial cost.
- The platform contributes to knowledge transfer by educating users on component compatibility, performance metrics, and build best practices.
- The modular and scalable design allows integration of additional features, such as e-commerce, VR/AR visualization, and automated benchmarking.

## 5.5 Limitations and Challenges

- Dependency on updated component databases for accuracy.
- Predictive AI may not fully account for extreme customizations.
- Real-time chat performance under peak loads requires further stress testing.
- Limited localization support; currently only English.

## 5.6 Recommendations for Future Work

1. **Database Expansion:** Include the latest hardware releases and user-submitted components.
2. **Advanced AI Features:** Introduce predictive power for overclocking scenarios and dynamic performance modeling.
3. **VR/AR Build Previews:** Allow users to virtually assemble PCs in immersive environments.
4. **Multi-Language Support:** Enable global reach by adding language localization.
5. **E-commerce Integration:** Connect component purchases directly from the platform with real-time price tracking and availability.

# Chapter 6 — Conclusions and Recommendations

## 6.1 Summary of Key Results

The PC Builder Platform successfully achieved the main objectives set at the beginning of the project:

1. **Automated Component Compatibility Checking:**
  - The system accurately flagged incompatible hardware selections.
  - Reduced user errors and improved the reliability of custom PC builds.
  - **Reference:** *Figure 4-18*(Compatibility Status Interface).
2. **AI-Powered Performance and Hardware Recommendations:**
  - Provided optimized build suggestions based on budget, intended use, and future-proofing.
  - Enhanced user decision-making and efficiency.
  - **Reference:** *Figure 4-16* (Performance Estimation and AI Recommendations).
3. **3D Component Visualization:**
  - Offered immersive 3D models for spatial understanding and assembly planning.
  - Improved confidence in hardware placement and fit.
  - **Reference:** Figure 1-1 (3D Visualization).
4. **Real-Time Communication and Community Interaction:**
  - SignalR-based chat system facilitated instant messaging with peers and tech support.
  - Admin dashboard allowed monitoring and management of platform activity.
  - **Reference:** *Figure 4-60* (Admin Dashboard Analytics) , *Figure 4-42*( Real-Time Chat System).

## 6.2 Conclusions

Based on the results and analysis, the following conclusions can be drawn:

- **Effectiveness:** The platform significantly reduces incompatibility risks and enhances the user experience in building PCs.
- **Innovation:** Integrating AI recommendations, 3D visualization, and real-time chat in a single platform provides a novel approach compared to traditional PC building guides and existing tools.
- **Limitations:** The platform relies on updated component databases for accurate AI predictions, and performance visualization is limited by available 3D models.
- **User Impact:** Both novice and experienced users benefit from guided, data-driven decision-making, minimizing wasted resources and improving build satisfaction.

## 6.3 Recommendations

To enhance the performance, usability, and scalability of the PC Builder Platform, the following recommendations are proposed:

1. **Database Updates:**
  - Continuously integrate newly released hardware and user-submitted components for accurate AI recommendations.
2. **Advanced AI Features:**
  - Implement predictive modeling for overclocking scenarios, power consumption estimates, and thermal analysis.
3. **VR/AR Integration:**
  - Enable immersive virtual assembly and preview of PC builds for better spatial understanding.
4. **Localization and Multi-Language Support:**
  - Expand platform accessibility by supporting multiple languages for a global audience.
5. **E-commerce and Marketplace Integration:**
  - Connect users to component purchasing options, real-time pricing, and availability updates.
6. **Performance and Scalability Enhancements:**
  - Optimize SignalR chat for high user traffic and implement server-side caching for faster response times.

## 6.4 Future Work and Open Problems

- **Expanded Component Coverage:** Include rare, legacy, or highly specialized components.
- **AI Learning from User Behavior:** Improve recommendations by learning from user choices and feedback.
- **Benchmarking Automation:** Integrate automatic performance benchmarking for user-submitted builds.
- **Community-Driven Features:** Introduce forums, shared build templates, and social integration.
- **Advanced Security Measures:** Enhance data privacy, secure payment options, and protect user-generated content.

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