

# **MediSquad : Revolutionizing Telehealth**

**Team Name - MediSquad**

## **Team Members**

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## **Introduction**

In the post-pandemic world, access to quality, affordable, and reliable healthcare from anywhere has become crucial. MediSquad addresses this need by providing a comprehensive telehealth solution that brings healthcare to your fingertips.

## **Problem Statement**

The global health crisis has highlighted several challenges in healthcare accessibility:

1. Limited access to instant health consultations
2. Lack of user-friendly platforms for patient information capture
3. Inefficient payment processing for telehealth services
4. Concerns about privacy and security of patient health information (PHI)
5. Need for seamless communication during telehealth sessions
6. Language and accent barriers in remote consultations

## **Our Solution: MediSquad**

MediSquad is a state-of-the-art telehealth application designed to address these challenges head-on. Here's how we've tackled each problem:

### **1. Instant Access to Health Consultation**

We've implemented Daily.co API to provide smooth video call functionality, closely mimicking in-person consultations. This ensures high-quality, reliable video connections for telehealth sessions.

**Test Case:** Conduct a video call between two users on different networks and verify video/audio quality and connection stability.

## **2. Patient Information Capture**

Our user-friendly interface allows patients to easily input their basic information and select the required specialty for consultation. The form is designed to be intuitive and comprehensive.

**Test Case:** Complete the patient information form with various inputs and verify data accuracy in the backend.

## **3. Secure Payment Processing**

We've integrated Square Web SDK as a robust payment gateway. This ensures secure and efficient payment processing before the consultation begins.

**Test Case:** Process a test payment and verify successful transaction and correct amount deduction.

### **Dummy Card:**

**No:** 4111 1111 1111 1111      **CVV:** 111      **ZIP:** 11111

## **4. Privacy and Data Security**

To maintain the highest standards of data privacy:

- All sensitive patient and doctor information is stored using strong hashing algorithms.
- We ensure that no user can access the meeting link before payment, using carefully sequenced API calls.

**Test Case:** Attempt to access a meeting link without payment and verify that access is denied.

## **5. In-App Communication**

Our integrated chat functionality allows seamless communication during the telehealth session, enhancing the consultation experience.

**Test Case:** Send and receive messages during a video call and verify real-time updates.

## **6. Efficient Doctor Allocation**

We've implemented a heapify algorithm to efficiently allocate doctors to patients based on the number of patients already assigned, ensuring balanced distribution.

**Test Case:** Simulate multiple patient allocations and verify even distribution among available doctors.

## 7. AI-Powered Health Assistant

We've integrated an AI chatbot to resolve common health concerns, providing instant support for non-emergency issues.

**Test Case:** Interact with the chatbot using various health-related queries and assess response accuracy and helpfulness.

## Future Enhancements

1. **Real-time Transcription:** Implement Deepgram API for live audio transcription to overcome language and accent barriers.
2. **Doctor Verification:** Introduce a robust document verification system to validate doctor authenticity.
3. **24/7 Emergency Consultancy:** Develop a round-the-clock emergency consultation service.
4. **Digital Prescriptions:** Enable doctors to write and patients to download digital prescriptions securely.

## Tech Stack

- Frontend: React.js, Tailwind CSS
- Backend: Node.js, Express.js
- Database: MongoDB
- Video Conferencing: Daily WebRTC
- Payment Processing: Square Web SDK
- AI and NLP: LangChain, Groq
- API Development: FastAPI
- Authentication & Security: JWT, bcrypt

## Conclusion

MediSquad represents a significant leap forward in telehealth technology. By addressing key challenges in healthcare accessibility, security, and user experience, we've created a platform that not only meets current needs but is also poised for future innovations in digital healthcare delivery.