

## 1 Team Members

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## 2 Topic: CUHK Venue and Equipment Booking SaaS

### 2.1 Planned N-1 Features

1. ActionMailer to send email notification to the user when the booking is confirmed and to the admin when there is pending approval.
2. Sidekiq+Redis to implement daily digest to each department admin (e.g. “Today’s bookings in the department”, “Pending approvals”.)
3. ActionCable to implement real-time booking status updates.
4. Chartkick dashboard to show the usage statistics of the venues or equipments.

### 2.2 Overview

Multi-Tenant SaaS Application built with **Rails 7.2.3** with Conflict detection and Approval workflow as the Core features. We will use PostgreSQL for the database. and RSpec for testing.

#### Data Models:

- **Department** (tenant isolation: Engineering, Arts, Medicine, etc.)
- **Resources** (2 types: Room or Equipment)
- **Booking** (status: pending → approved/rejected/expired)
- **User** (student submits, admin approves)

#### Major Pain Points and Solutions:

Pain Point	Solution
<b>Fragmented booking</b> Double booking may happen since every department have separate system for booking	<b>Conflict detection</b> Single Rails database to check the availability in real-time
<b>No approval workflow</b> Direct booking without approval may cause conflicts (e.g. proposed exam)	<b>Multi-stage approval</b> Student submits booking request → pending → admin can approve or reject
<b>Poor visibility</b> Lack of current room/equipment utilisation statistics	<b>Chartkick dashboard</b> Room usage charts + peak times + email notifications
<b>Manual communication</b> Need email chains to get approval without a centralised system, may be time-consuming	<b>ActionCable + ActionMailer</b> Admin approve → instant browser notification + confirmation email