

Project proposal

# ‘UniConnect’

*The Intelligent Campus Companion*

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## **Problem domain**

Nelson Mandela University (NMU) is a sizable, multicultural university where students must continuously balance a number of obligations, including going to lectures, handling homework, keeping track of shuttle schedules, locating study materials, and looking after their mental health.

At the moment, these necessary services are dispersed over several platforms and manual procedures. Timetables, library resources, shuttle reservations, wellness assistance, and campus safety alerts are among the many apps or websites that students frequently navigate between. This disjointed approach can result in missed deadlines for assignments, trouble swiftly accessing crucial campus resources, a lack of individualised communication catered to each student's needs, a lack of knowledge about wellness and mental health support services, and safety issues when navigating the campus at night or in an emergency.

There is a clear opportunity to consolidate these tools into a single, secure, and personalized mobile platform that supports academic success, well-being, and campus engagement, while leveraging modern AI and device capabilities to enhance the overall student experience.

## **Proposed solution**

- **What the system should do, and how it should do it?**
  1. Organise all of the campus resources in one place, including schedules, homework, shuttle tracking, library services, safety warnings, and wellness materials.
  2. Use an AI engine that learns each student's schedule, interests, and needs to tailor the experience and provide pertinent alerts and suggestions.
  3. Send out real-time alerts for campus safety, event reminders, and shuttle arrivals.
  4. AI-recommended safe walking routes and location-based emergency warnings can improve safety.
  5. By putting students in touch with organisations, study groups, and employment prospects, you may promote involvement.

- **How would the system improve/support the current domain?**

1. Reduce missed deadlines through smart academic reminders.
2. Save time by providing quick access to resources in one app.
3. Improve student safety through location-based alerts.
4. Support mental health by integrating wellness tools and counselling booking.
5. Increase awareness of campus events, services, and opportunities.

- **Whether it should be desktop-, web-, or mobile-based (or combination):**

The system will be **mobile-based**, designed for Android devices, as this ensures accessibility for students who rely heavily on smartphones.

- **Technologies to be used:**

1. Frontend: Android Studio (Java)
2. Backend: Firebase Realtime Database / MySQL with PHP API
3. Authentication: Firebase Authentication
4. AI Integration: Google ML Kit or custom AI recommendation engine
5. Device Features: GPS for shuttle tracking and safe routes, Camera for lost & found item reporting
6. Version Control: GitHub

- **Screens / System Functions the system will need:**

1. Login & Registration Screen
2. Dashboard (Personalized AI Campus Assistant)
3. Timetable & Academic Management Screen
4. Assignment Tracking Screen
5. Library Search & Reservations Screen
6. Shuttle Tracking & Seat Booking Screen
7. Wellness & Mental Health Hub Screen
8. Campus Services (Maintenance Requests, Lost & Found, Food Ordering) Screen
9. Safety & Emergency Screen
10. Social & Clubs Screen
11. Career Opportunities Screen
12. Reports & Analytics Screen
13. Help & Support Screen

- **Database Requirements:**

*Minimum 10 tables, e.g.:*

1. Users
2. Roles
3. Courses
4. Timetables
5. Assignments
6. Library Items
7. Shuttle Routes
8. Wellness Records
9. Events
10. Maintenance Requests
11. Safety Alerts

- **Interesting Features our system will have:**

1. A Personalized AI Campus Assistant will greet the student each day with a context-aware daily briefing, e.g.:

*“Good morning, Tshifhiwa! Your shuttle to North Campus departs in 30 minutes, you should make your way soon. You have an IT project lecture at 8 AM in Building 254. The library is hosting a Data Science workshop at 3 PM — would you like to register?”*

2. This will combine GPS tracking, calendar integration, and AI-powered recommendations to make campus navigation and time management easier.

- **Reports to Generate:**

1. Academic performance summaries
2. Shuttle usage statistics
3. Wellness tracking trends

- **Help/Guidance:**

1. In-app onboarding tutorial
2. FAQ section
3. Live chat with AI and human support