# PROJECT PROPOSAL SUBMISSION

## 1. Team Name: Team bits

## 2. Team Members' Introduction:

We are a group of **second-year Computer Science and Engineering undergraduates** from the **University of Moratuwa**, passionate about building data-driven solutions for real-world challenges. Our team combines strengths in software engineering, AI/ML, data science, and cloud technologies to create impactful and scalable systems.

- **W.S.S Jayawardhana** – Team Leader
- **M.D.S Gangadari** – Team Member
- **W.M.J.S.Jayathunga** – Team Member
- **D.C. Abeynayake** – Team Member
- **K.Y.T.Wickramasinghe** – Team Member

## 3. Solution Name: AgriLink– Real-Time Agri-Price Alert API

## 4. Problem Addressed:

Small-scale farmers, sellers, and consumers in Sri Lanka often suffer from unpredictable and unstable market prices for **agricultural products** such as **vegetables, rice, grains, fruits**, and more. Lack of real-time and localized price information leads to poor selling decisions, financial losses, food waste, and uninformed purchases. There's a critical need for an affordable, accessible system that delivers timely and intelligent price updates across the country.

## 5. Solution for the Problem:

**AgriLink** is a real-time, AI-powered agri-price alerting system built using **mSpace APIs**, which delivers:

- Instant or daily **SMS-based price alerts** for a variety of agricultural products.
- **AI-driven price trend predictions** using historical data.
- **Localized alerts** by province/district to match regional markets.
- A RESTful API that integrates with farmer platforms, e-commerce systems, or standalone mobile/web apps.
- A user-friendly website with an integrated chatbot interface, connected to our price alert API and SMS sending mechanism, allowing farmers to check current prices and receive notifications.

## 6. Key Features of the Solution:

- **Real-time SMS Notifications:**
  Get real-time or scheduled price alerts for vegetables, rice, grains, and fruits using mSpace Messaging API.
- **AI-based Forecasting Engine:**
  Predict short-term price fluctuations using **ARIMA** or **LSTM** models, supported by GenAI for summarization.
- **Personalized Price Alerts:**
  Receive SMS when specific vegetable prices go above/below user-defined thresholds (e.g., "Notify me when carrot > Rs. 120/kg").
- **Location-based Customization:**
  Farmers receive alerts relevant to their local markets (e.g., Kandy, Jaffna, Galle).
- **Open REST API:**
  Third-party agriculture apps or cooperatives can integrate our alert service.
- **Admin Web Dashboard (Optional):**
  Web interface to manage user subscriptions, configure alerts, and monitor API usage.

## 7. mSpace APIs That Will Be Used:

- **Messaging API:** To send SMS alerts and replies to users.
- **Location API (if available):** To personalize price alerts based on the user's area.
- **Subscription Management API:** To manage user subscriptions, price thresholds, and preferences.

*If further confirmation is needed, we will email our final API selections within a week.*

## 8. Generative AI Tools That Will Be Used:

- **OpenAI GPT (via API):** To generate trend summaries and human-friendly insights such as:
  *"Onion prices are expected to increase next week due to supply drop in Dambulla."*
- **Sinhala/Tamil Prompt Engineering:**
  Messages will be auto-translated and customized using fine-tuned prompts for local language clarity.
- **Natural Language Query Handler:**
  A GenAI-enabled SMS responder will allow users to ask questions like:
  *"What's the current price of tomatoes in Colombo?"* and receive instant SMS replies.