Mobile Phone Pricing Prediction System - Technical Specifications

1. Project Overview

1.1 Objective

Develop a machine learning system that predicts mobile phone pricing categories (low/medium/high/very high) based on device specifications and features.

1.2 Business Value

- Enable competitive pricing strategies for mobile manufacturers
- Assist retailers in pricing decisions
- Provide market insights for product positioning
- Support inventory management and procurement decisions

2. System Architecture

2.1 High-Level Architecture

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Data Input → Data Processing → Feature Engineering → Model Training → Model Evaluation → Prediction API
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2.2 System Components

- **Data Ingestion Module**: Handles raw mobile phone data
- **Data Preprocessing Pipeline**: Cleans and transforms data
- **Feature Engineering Engine**: Creates derived features and handles encoding
- **Model Training Service**: Trains and validates ML models
- **Prediction API**: Serves real-time predictions
- **Model Management**: Handles model versioning and deployment

3. Data Specifications

3.1 Input Dataset Schema

Feature	Type	Description	Range/Values
battery_power	Integer	Battery Capacity (mAh)	500-2000+
blue	Boolean	Bluetooth support	0/1
clock_speed	Float	Processor speed (GHz)	0.5-3.0+
dual_sim	Boolean	Dual SIM support	0/1
fc	Integer	Front camera (MP)	0-20+
four_g	Boolean	4G support	0/1
int_memory	Integer	Internal memory (GB)	2-64+
m_deep	Float	Mobile depth (cm)	0.1-1.0+
mobile_wt	Integer	Weight (grams)	80-200+
n_cores	Integer	Processor cores	1-8
pc	Integer	Primary camera (MP)	0-20+
px_height	Integer	Pixel height	0-2000+
px_width	Integer	Pixel width	500-2000+
ram	Integer	RAM (MB)	256-4000+
sc_h	Float	Screen height (cm)	5-20
sc_w	Float	Screen width (cm)	0-18
talk_time	Integer	Battery life (hours)	2-25
three_g	Boolean	3G support	0/1
touch_screen	Boolean	Touch screen	0/1
wifi	Boolean	WiFi support	0/1

3.2 Target Variable

- **price_range**: Categorical (0=L