Abstract

BankBot AI: Revolutionizing Secure and Intelligent Banking

BankBot AI is a next-generation banking assistant powered by artificial intelligence, designed to deliver secure, personalized, and efficient banking experiences. The system integrates advanced technologies such as natural language processing (NLP), biometric authentication, fraud detection, and credit scoring, offering an innovative approach to modern banking.

Core Functionalities:

1. **Natural Language Processing**:
    - Intent classification for user queries.
    - Contextual response generation with multi-language support.
    - Sentiment analysis for user satisfaction.
2. **Biometric Authentication**:
    - Facial recognition and multi-factor authentication for secure access.
    - Robust security protocols for user protection.
3. **Fraud Detection System**:
    - Real-time monitoring of transactions.
    - Anomaly detection using machine learning.
    - Risk scoring for proactive fraud prevention.
4. **Credit Scoring System**:
    - Credit risk assessment through predictive analytics.
    - Financial behavior analysis for personalized credit recommendations.

Technology Stack:

- **Programming Languages**: Python 3.8+
- **Frameworks and Libraries**: TensorFlow, Keras, scikit-learn, OpenCV, and NLTK.
- **Machine Learning Models**: XGBoost, Random Forest, Gradient Boosting, and Isolation Forest.

Proposed System Modules:

1. **Authentication Module**: Manages facial recognition, access control, and security protocols.
2. **Fraud Detection Module**: Implements transaction monitoring and risk assessment.
3. **Credit Scoring Module**: Handles credit risk prediction and financial analysis.

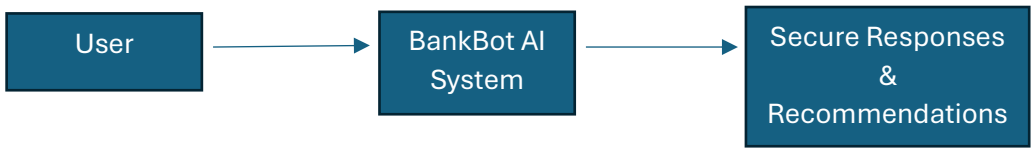
4. **Core Bot Module**: Manages NLP-based user interactions and response generation.

Advantages:

- Enhanced security through multi-factor authentication and fraud detection.
- Intelligent user interactions with real-time assistance.
- Data-driven insights for better financial decision-making.

Data Flow Diagrams:

Level 0 DFD:



Level 1 DFD: