

Project Title: SmartFin TON Bot

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1. Abstract

The **SmartFin TON Bot** is an innovative AI-powered financial assistant designed to simplify cryptocurrency transactions on The Open Network (TON). By integrating a powerful natural language processing (AI) model with the secure **TON Connect** protocol, this Telegram bot allows users to perform complex financial actions by simply chatting in plain English. This project bridges the gap between the complexity of Web3 technology and the user-friendly experience of a messaging app, making crypto payments as intuitive as sending a text message.

2. The Problem

While blockchain technology offers decentralization and security, a significant barrier to its mass adoption is the often-unintuitive user experience. Executing a simple transaction requires users to handle long, complex wallet addresses, understand concepts like gas fees, and navigate multiple steps. This process can be intimidating and prone to errors for beginners, hindering the seamless integration of crypto payments into daily life.

3. Our Solution

The SmartFin TON Bot solves this problem by providing an intelligent and conversational interface for financial transactions on TON. Our solution allows users to:

- **Initiate Payments with Natural Language:** Instead of manually creating a transaction, a user can simply instruct the bot, e.g., "Send 2.5 TON to [wallet address] for lunch."
- **Leverage AI for Understanding:** The bot uses a sophisticated AI model (Google's Gemini) to understand the user's intent, accurately extracting key details like the payment amount, recipient address, and transaction reason.
- **Ensure Security with TON Connect:** The bot never handles the user's private keys or funds directly. It securely constructs a TON Connect transaction link, which the user confirms and signs within their own trusted mobile wallet (e.g., Tonkeeper), ensuring maximum security.

4. Core Features

- **AI-Powered Intent Recognition:** The bot intelligently distinguishes between a payment request and a general chat query.
- **Natural Language Payment Processing:** Accurately parses amounts, wallet addresses, and memos from unstructured text messages.
- **Dynamic TON Connect Link Generation:** Creates secure, pre-filled transaction links on the fly based on user requests.
- **Interactive Chatbot:** For non-financial queries, the bot acts as a helpful assistant named 'Fin', providing general information and support.
- **Donation Functionality:** Includes a simple /donate command as a proof-of-concept for static payment links.

5. Technology Stack

- **Programming Language:** Python
- **Development Platform:** Replit
- **Bot Framework:** pyTelegramBotAPI library for Telegram Bot integration.
- **AI & NLP:** Google Gemini 1.5 Flash Model via the google-generativeai API.
- **Blockchain Integration:** TON Connect v2 protocol for secure wallet transactions.
- **Database/Secrets Management:** Replit Environment Secrets for secure API key storage.

6. Future Scope

The SmartFin TON Bot is a robust foundation that can be expanded with more advanced features, including:

- **Checking Wallet Balance:** Allowing users to query their TON wallet balance.
- **Transaction History:** Enabling users to view their recent transaction history.
- **Multi-Language Support:** Training the AI to understand and process requests in other languages.

- **Scheduled & Recurring Payments:** Adding functionality for users to set up future or recurring transactions.