🔐ML-Based Password Generator

An intelligent password generator app powered by a trained LSTM neural network. Built using **Python**, **Kivy** for UI, and **TensorFlow/Keras** for the ML model, it provides strong, pattern-based, and human-like secure passwords.

🗜️Features

- ✅**AI-based password generation** (LSTM model)
- 🔙**Modern dark-themed UI** with smooth animations
- 🈳Customizable password length via a slider (8–32)
- Offline model execution — full privacy
- 🔁Responsive generate button with color pulse animation
- ♾️Fully APK-compatible with Buildozer

📦Installation & Setup

🖥️For Local Development

1. Clone the Repository:

```
git clone https://github.com/atribiswas03/Random-Password-Generator
cd MLPasswordApp
```

2. Install Python Dependencies:

```
pip install kivy tensorflow keras numpy
```

3. (Optional) Train the Model from Scratch:

```
python main.py
```

This will:

- Generate training data (`english_words.txt`)
- Train an LSTM model
- Save `model.h5` and `char_to_index.pkl`

⚠️You can skip this step if `model.h5` and `char_to_index.pkl` already exist.

Training Logic Summary

- Trains an LSTM model on 30,000 synthetic password-like sequences
- Stores model in `model.h5`
- Saves character mappings in `char_to_index.pkl`
- Generates new passwords by predicting one character at a time

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🪥Build APK (Android)

Using Buildozer (in Linux or WSL):

```
sudo apt update && sudo apt install -y python3-pip git zip unzip openjdk-17-jdk
build-essential
pip install --upgrade pip cython
pip install buildozer

buildozer init
# (Edit buildozer.spec as shown below)
buildozer -v android debug
```

Edit these lines in `buildozer.spec`:

```
source.main = main.py
requirements = python3,kivy,tensorflow,keras,numpy
icon.filename = %(source.dir)s/icon.png
android.permissions = INTERNET
android.api = 31
android.minapi = 21
```

♒Final APK: `bin/MLPasswordApp-debug.apk`

🧰Folder Structure

```
MLPasswordApp/
├── main.py                 # Full Kivy UI + ML logic in one file
├── model.h5               # Trained LSTM model
├── char_to_index.pkl      # Char mapping for model
├── icon.png               # App icon (512x512)
```

```
├── english_words.txt     # (Optional) training data
└── README.md             # This file
```

🧱 Demo

```
🔐 ML-Based Password Generator
Password Length: [8-32] → [Generate Password]
➡️ Example: J3!Vtx*Ubg1p@
```

📄 License

This project is licensed under the **MIT License**.

Acknowledgments

Created by Atri Biswas

Feel free to contribute or customize for your own smart password manager!