

Delivery Report: Steganography Encryption Tool

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Version: 1.0.0

Platform: Windows (Packaged as Standalone Executable)

Overview

Hide & Seek is a secure steganography tool that allows users to encrypt secret messages using AES-256 encryption and hide them inside image files (PNG/BMP) using Least Significant Bit (LSB) steganography. The tool includes both a Command-Line Interface (CLI) and a Graphical User Interface (GUI) to cater to both technical and non-technical users.


Deliverables

- hideandseek.exe – Windows executable for the GUI tool (no installation needed)
- README.md / README.txt – Full usage guide for both CLI and GUI
- sample_image.png – Test image file for hiding and extracting messages
- (Optional) HideAndSeekTool.zip – Zipped delivery folder containing all of the above

Features Implemented

- AES-256 encryption with password-derived keys (PBKDF2 + SHA-256)
- LSB image-based steganography for data hiding
- CLI tool with `hide` and `extract` commands
- Tkinter-based GUI with user-friendly tabbed interface
- PyInstaller-based `.exe` packaging (fully portable, offline)
- Unicode support for messages (including emojis and multilingual text)
- Validation and error handling (e.g., password mismatch, image too small)
- Unit and integration tests (via `pytest`)

Manual Testing Performed

-  Encrypt and hide message in a sample image

- ☒ Extract and decrypt hidden message correctly
- ☒ Handle wrong password gracefully
- ☒ Prevent embedding if image is too small
- ☒ GUI input validation and success/error notifications
- ☒ CLI and GUI tested on Windows (Python 3.10+)

Security Notes

- All messages are encrypted before embedding
- Salt and IV are randomly generated per message
- Password is not stored or visible at any point
- Final stego image is visually indistinguishable from the original

Recommendations

- Ideal for personal secure messaging, watermarking, or low-risk covert communication
- Not intended for high-capacity data hiding (limited to short text messages ~1KB)
- Avoid using lossy image formats like JPG

Next Steps (Optional)

- Add drag-and-drop or dark mode to GUI
- Add QR code output or message export
- Build a Mac or Linux version (.app or AppImage)

Status

- ☒ Delivered & Ready to Use

If any installation assistance or feature enhancement is required, feel free to reach out.