# 🛠️ Swissknife

A lightweight CLI toolkit (**exactly 250 lines of Python**) for universal file conversion and AI-powered summarization.

## ⚡ Features

### 🔄 Convert Files

* **Documents** → PDF, DOCX, TXT, MD, EPUB, PPTX, XLSX
* **Images** → JPG, PNG, WEBP, GIF, BMP, TIFF, PDF
* **Audio** → MP3, WAV, FLAC, AAC, OGG, M4A
* **Video** → MP4, AVI, MKV, MOV, WMV, FLV, WEBM, GIF
* **Archives** → ZIP, TAR, GZ, BZ2, 7Z, RAR

### 🤖 AI-Powered Summarization

* **Text Documents** → Extract and summarize content using BART
* **Audio/Video** → Transcribe with Whisper → Summarize text
* **Images** → Basic image information display
* **Configurable lengths** → Short, Medium, Long summaries

### 📊 Advanced Features

* **Batch Processing** → Convert entire directories
* **Operation Logging** → JSON-based history tracking
* **File Information** → Detailed metadata display
* **Temp File Cleanup** → Automatic cleanup of old temporary files
* **Format Validation** → Smart format compatibility checking

## 🔧 Installation

git clone https://github.com/yourname/swissknife.git  
cd swissknife  
pip install -e .

## 🚀 Usage

### Single File Conversion

python index.py convert input.docx output.pdf  
python index.py convert image.png image.jpg --preserve-metadata  
python index.py convert audio.mp3 audio.wav  
python index.py convert video.mp4 video.gif

### Batch Conversion

python index.py batch-convert ./docs ./output .docx .pdf  
python index.py batch-convert ./images ./converted .png .jpg

### AI Summarization

python index.py summarize document.pdf --length medium  
python index.py summarize lecture.mp4 --length long  
python index.py summarize report.docx --length short

### File Information & Management

python index.py info document.pdf  
python index.py logs  
python index.py cleanup  
python index.py version

## 🧩 CLI Commands

| Command | Description | Example |
| --- | --- | --- |
| convert | Convert single files | convert input.docx output.pdf |
| batch-convert | Batch convert directories | batch-convert ./docs ./out .md .pdf |
| summarize | AI-powered summarization | summarize file.pdf --length medium |
| info | Display file metadata | info document.pdf |
| logs | Show operation history | logs |
| cleanup | Clean temporary files | cleanup |
| version | Show version info | version |

## 📦 Dependencies

* **CLI Framework:** argparse (stdlib)
* **Document Processing:** pypandoc-binary, python-docx, pdfplumber
* **Image Processing:** Pillow
* **Audio Processing:** pydub
* **Video Processing:** moviepy, ffmpeg-python
* **AI/ML:** transformers, torch, openai-whisper
* **Utilities:** hashlib, json, pathlib (stdlib)

## 🎯 Project Specifications

* **Line Budget:** Exactly 250 executable lines of Python
* **Architecture:** Modular functions with clear separation of concerns
* **Error Handling:** Comprehensive validation and user-friendly messages
* **Logging:** JSON-based operation tracking
* **Compatibility:** Python 3.8+ with cross-platform support

## 📁 Project Structure

swissknife/  
├── index.py # Main CLI application (250 lines)  
├── pyproject.toml # Dependencies and project config  
└── README.md # Documentation