Installation Guide

Complete installation instructions for the Human Blur CLI Tool.

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System Requirements

Minimum Requirements

- **OS:** Linux, macOS, or Windows 10+
- **Python:** 3.8 or higher
- **RAM:** 4 GB minimum (8 GB recommended)
- **Disk:** 500 MB free space (for models and dependencies)
- **CPU:** Any modern multi-core processor

Recommended for Best Performance

- **RAM:** 16 GB or more
- **GPU:** NVIDIA GPU with CUDA support (GTX 1060 or better)
- **CPU:** Intel i5/AMD Ryzen 5 or better

Installation Methods

Method 1: pip install (Recommended)

```
# Install from requirements.txt
pip install -r requirements.txt

# Verify installation
python blur_humans.py --help
```

Method 2: System-wide installation

```
# Install as a command-line tool
pip install -e .

# Now you can use it from anywhere
blur-humans --help
```

Method 3: Virtual Environment (Recommended for Development)

On Linux/macOS:

```
# Create virtual environment
python3 -m venv venv

# Activate virtual environment
source venv/bin/activate

# Install dependencies
pip install -r requirements.txt

# Use the tool
python blur_humans.py --help
```

On Windows:

```
# Create virtual environment
python -m venv venv

# Activate virtual environment
venv\Scripts\activate

# Install dependencies
pip install -r requirements.txt

# Use the tool
python blur_humans.py --help
```

Method 4: Using Conda

```
# Create conda environment
conda create -n blur-humans python=3.10

# Activate environment
conda activate blur-humans

# Install dependencies
pip install -r requirements.txt

# Use the tool
python blur_humans.py --help
```

Verification

Test Installation

```
# Check if all imports work
python -c "import cv2, numpy, ultralytics; print('✓ All dependencies installed')"

# Display help
python blur_humans.py --help

# Check version
python blur_humans.py --version
```

First Run (Downloads YOLO Model)

The first time you run the tool, it will automatically download the YOLO model (~6 MB):

```
python blur_humans.py test.jpg
```

Expected output:

```
Loading YOLO model: yolov8n.pt...
Downloading https://github.com/ultralytics/assets/releases/download/v8.3.0/yolov8n.pt...
✓ Model loaded successfully
```

GPU Setup (Optional)

GPU acceleration provides 5-10x faster processing. Only works with NVIDIA GPUs.

Step 1: Check CUDA Availability

```
# Check if you have an NVIDIA GPU
nvidia-smi

# Check PyTorch CUDA support
python -c "import torch; print(f'CUDA available: {torch.cuda.is_available()}')"
```

Step 2: Install CUDA-enabled PyTorch

For CUDA 11.8:

```
pip install torch torchvision --index-url https://download.pytorch.org/whl/cu118
```

For CUDA 12.1:

```
pip install torch torchvision --index-url https://download.pytorch.org/whl/cu121
```

For CUDA 12.4:

```
pip install torch torchvision --index-url https://download.pytorch.org/whl/cu124
```

Step 3: Verify GPU Support

```
python -c "import torch; print(f'GPU: {torch.cuda.get_device_name(0) if
torch.cuda.is_available() else "Not available"}')"
```

Expected output:

```
GPU: NVIDIA GeForce RTX 3060
```

Platform-Specific Instructions

Ubuntu/Debian Linux

```
# Install system dependencies
sudo apt update
sudo apt install -y python3 python3-pip python3-venv

# Install Python packages
pip3 install -r requirements.txt
```

macOS

```
# Install Homebrew (if not installed)
/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/in-
stall.sh)"

# Install Python
brew install python@3.11

# Install dependencies
pip3 install -r requirements.txt
```

Note: macOS doesn't support CUDA/GPU acceleration. Use CPU processing.

Windows

```
# Download and install Python from python.org
# Make sure to check "Add Python to PATH" during installation

# Open Command Prompt or PowerShell
# Navigate to project directory
cd path\to\human-blur-tool

# Install dependencies
pip install -r requirements.txt
```

Troubleshooting

Issue: “ModuleNotFoundError: No module named ‘cv2’“

Solution:

```
pip install opencv-python
```

Issue: “No module named ‘ultralytics’“

Solution:

```
pip install ultralytics
```

Issue: PyTorch installation fails

Solution 1: Use conda

```
conda install pytorch torchvision -c pytorch
```

Solution 2: Install CPU-only version

```
pip install torch torchvision --index-url https://download.pytorch.org/whl/cpu
```

Issue: “Permission denied” on Linux/macOS

Solution:

```
# Make script executable
chmod +x blur_humans.py

# Or use python explicitly
python blur_humans.py --help
```

Issue: YOLO model download fails

Solution: Manually download the model

```
python -c "from ultralytics import YOLO; YOLO('yolov8n.pt')"
```

Issue: Out of memory error

Solution 1: Use smaller model

```
python blur_humans.py image.jpg --model yolov8n.pt
```

Solution 2: Process fewer images at once

```
# Instead of processing entire directory
# Process in batches
```

Issue: ImportError with numpy/OpenCV

Solution: Reinstall with compatible versions

```
pip uninstall opencv-python numpy
pip install opencv-python numpy
```

Issue: “CUDA out of memory” (GPU)

Solution: Force CPU processing

```
export CUDA_VISIBLE_DEVICES=""
python blur_humans.py image.jpg
```

Updating

Update Dependencies

```
# Update all packages
pip install --upgrade -r requirements.txt

# Update specific package
pip install --upgrade ultralytics
```

Update YOLO Models

Models are cached after first download. To get latest:

```
# Remove cached model
rm yolov8n.pt

# Next run will download latest version
python blur_humans.py image.jpg
```

Uninstallation

Remove Dependencies Only

```
pip uninstall opencv-python numpy ultralytics torch torchvision
```

Remove Everything

```
# If using virtual environment
rm -rf venv/

# If installed system-wide
pip uninstall human-blur-tool

# Remove cached models
rm -rf ~/.cache/ultralytics/
```

Development Installation

For developers who want to modify the code:

```
# Clone/download the repository
git clone https://github.com/yourusername/human-blur-tool.git
cd human-blur-tool

# Create virtual environment
python -m venv venv
source venv/bin/activate  # On Windows: venv\Scripts\activate

# Install in editable mode with dev dependencies
pip install -e .

# Make changes to blur_humans.py
# Changes take effect immediately
```

Docker Installation (Advanced)

For isolated environment:

```
# Dockerfile
FROM python:3.11-slim

WORKDIR /app

COPY requirements.txt .
RUN pip install -r requirements.txt

COPY blur_humans.py .

ENTRYPOINT ["python", "blur_humans.py"]
```

```
# Build image
docker build -t blur-humans .

# Run tool
docker run -v $(pwd):/data blur-humans /data/image.jpg
```

Support

If you encounter issues not covered here:

1. Check the main README.md (README.md)
2. Review EXAMPLES.md (EXAMPLES.md) for usage examples
3. Verify Python version: `python --version` (must be 3.8+)
4. Check pip version: `pip --version` (should be recent)
5. Try reinstalling in a fresh virtual environment

Installation complete! 🎉 Check out EXAMPLES.md (EXAMPLES.md) for usage examples.