



# User Documentation

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a-miscellaneous edited this page yesterday · 13 revisions

## Introduction

Welcome to the user documentation for the *amos2023ws03-gui-frame-diff* project. This tool is designed for analyzing and presenting differences in various video files. The purpose of this documentation is to guide users through the setup and utilization of the software.

## Getting Started

To get started, download the latest stable [release](#). The zipped file contains the source code. Building and running the modules individually depends on having a `gradle` installation. Refer to the [build/deploy documentation](#) for a step-by-step guide on building the individual modules.

## Overview

The software comprises three modules, each serving a specific purpose.

## Using Library 1 (Video Generator)

Library 1 is a standalone `kotlin` library designed for compatibility with Android applications and various operating systems.

### 1. Video Generation:

- Invoke the `VideoGenerator` class with a user-specified output path.
- Use the `loadFrame` function to add images to the video.
- Save the generated video using the `save` function.

## Using Library 2 (Difference Generator)

Library 2 is another standalone `kotlin` library for video difference analysis.

### 1. Initialization:

- Create an `AlignmentAlgorithm` or use an instance of the `Gotoh Algorithm`.
  - `Gotoh` requires a metric (e.g. `PixelCountMetric`), `gapOpenPenalty` and `gapExtensionPenalty`.
- Create an instance of the `DifferenceGenerator` class, specifying paths to the videos, the output file path, the `Alignment Algorithm` and an optional mask.

### 2. Validation:

- The `DifferenceGenerator` automatically validates video codecs and ensures equal dimensions.
- A warning is thrown if the reference video is newer than the current video.

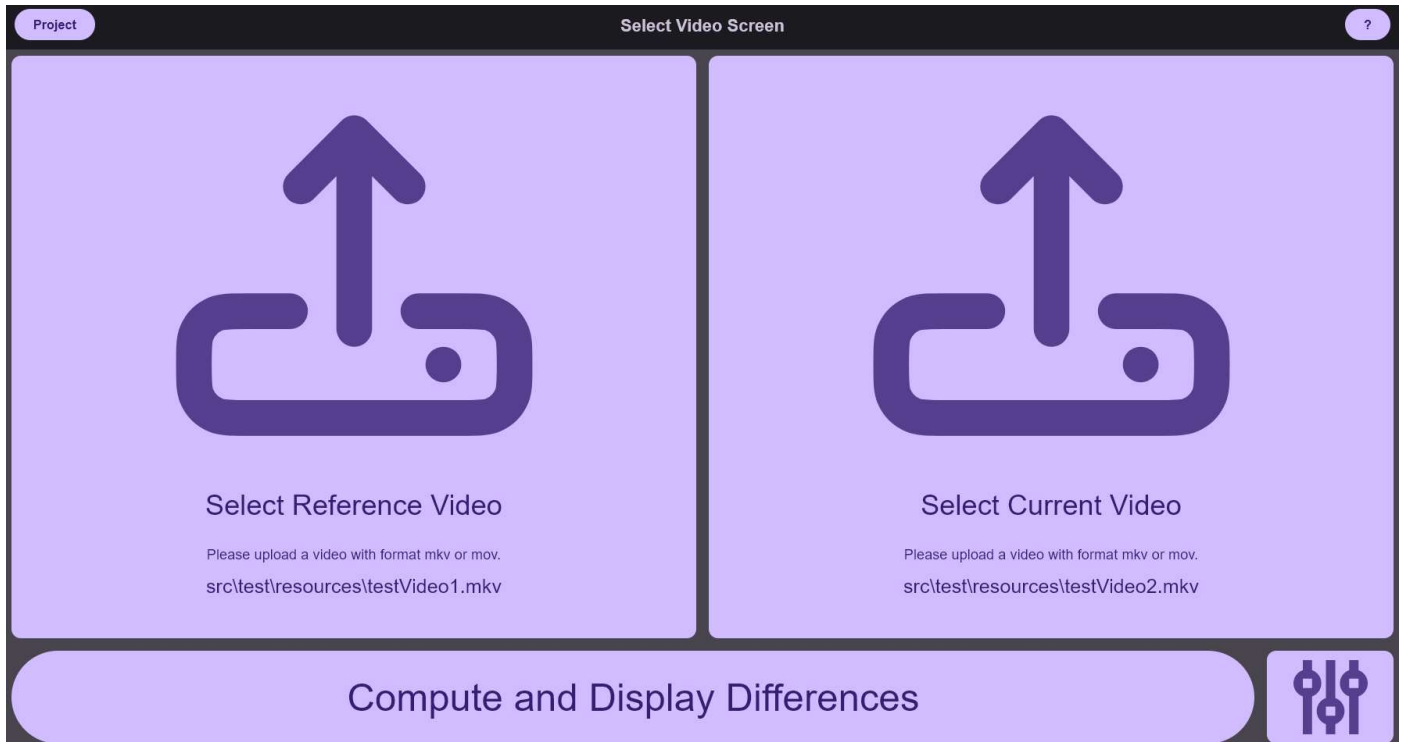
### 3. Generating the Difference Video:

- Output highlights differences between the input videos.
- The generator automatically computes the difference video, applying an optional mask.
- A mask is an image with clear pixel for non-masked areas and opaque pixels for areas which should be ignored in the comparison.

# Using the Graphical User Interface (GUI)

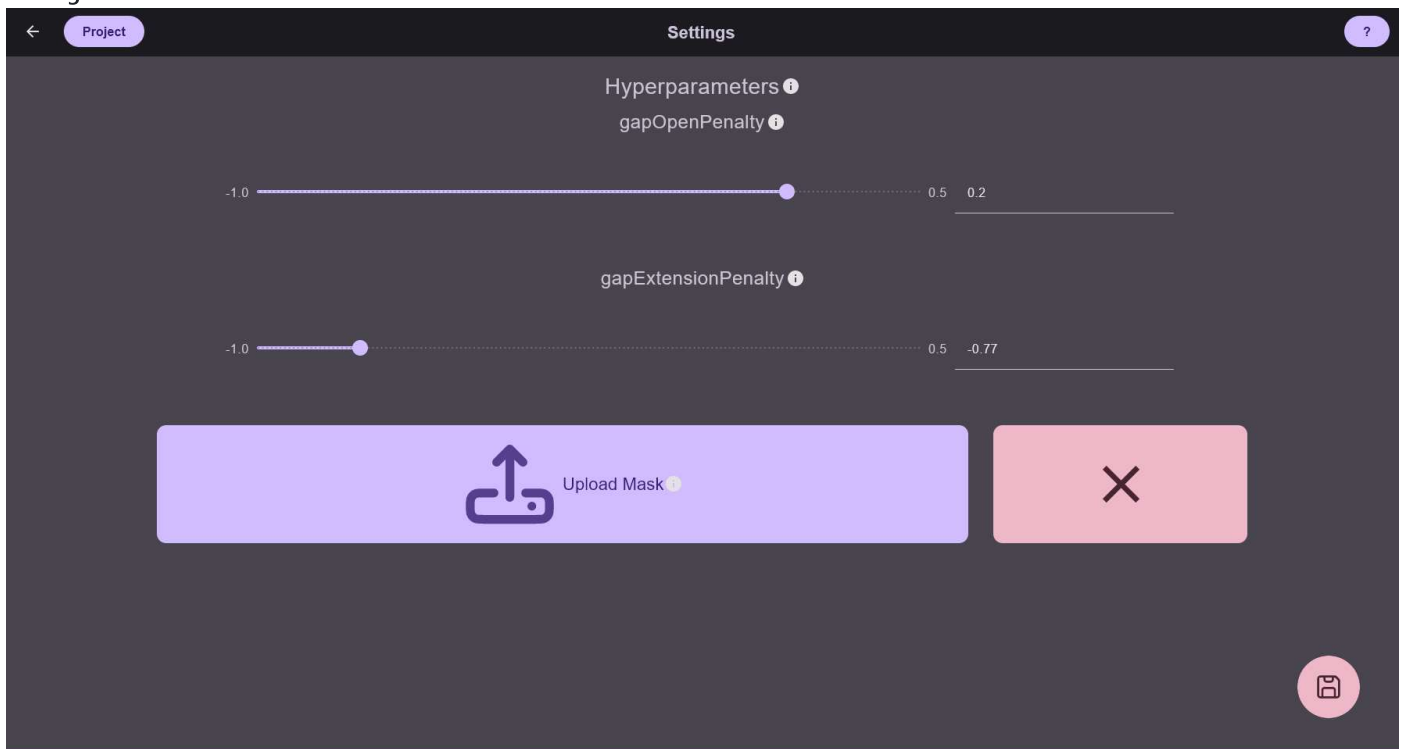
The GUI, built with Compose multiplatform, utilizes Library 2 for interactive video difference evaluation. There are three main Screen in the UI. All screens except the landing screen allow the user to return to the landing screen.

## 1. Select Video Screen



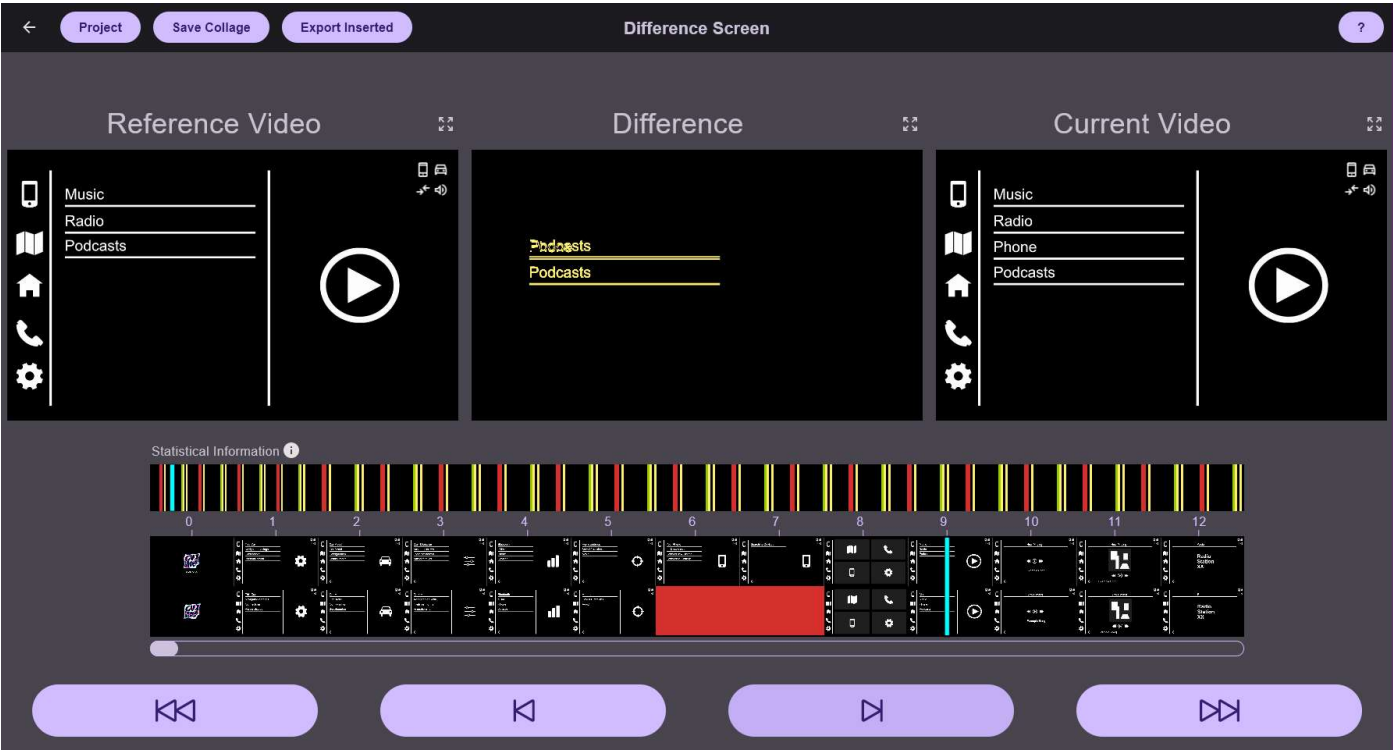
- The landing screen
- Allows the user to select the comparison Videos. Switch to the settings screen or start the difference calculation.
- In case the Reference Video is newer than the Current Video a confirmation is required to proceed with calculation.

## 2. Settings Screen



- Allows for the adjustment of the (Gotoh) algorithm.
- Supports Mask upload and removal.
- Changes can be saved or reverted, both transfer to the `Select Video Screen`

3. Difference Screen



- Displays the frames of each video side-by-side. (Reference, Difference, Current)
- Allows for navigation using 4 Methods: - Buttons: skip to the next/previous frame/detected difference - Global Timeline: Displays the complete Difference Video with a color-coding for inserted, deleted and different frames - Local Timeline: Displays the Reference and Current Videos on top of each other with insertions and deletions (closer view with thumbnails) - Key presses: simulate buttons, arrow keys navigate frames, holding `Ctrl` navigates differences
- provides the ability to create a new window for each Video that only displays the single video
- allows the user to save a single frame by right-clicking on a video
- allows the user to save all three frames as a `collage`
- allows to export all inserted frames with a button

For detailed instructions and additional information, refer to the respective sections in this documentation.

Currentness of Documentation

This documentation is written on the basis of [Release 12](#). Changes beyond this release are not yet documented here.

Legal Information

The entire project operates under the MIT license, making it open and free for use.

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