Snapscreen Clip Share: Utilizing Computer Vision to Bridge TV and Social Media

Thomas Willomitzer

Snapscreen Application GmbH

Vienna, Austria

willo@snapscreen.com

Tyler Tracy

Snapscreen Application GmbH

Vienna, Austria

tyler.tracy@snapscreen.com

Markus Rumler

Snapscreen Application GmbH

Vienna, Austria

markus.rumler@snapscreen.com

Abstract

This demonstration showcases Snapscreen Clip Share: a second-screen technology for seamless identification and social sharing of live or recorded TV content. With Clip Share, app users take a snapshot of their viewing screen to generate a broadcast-quality clip of the current program instantly on their mobile device; then, users rewind through the retrieved segment, trim the beginning and end of their clip, add a personal message to kick-off discussion, and share the clip through a range of messaging apps and social media platforms. Where existing clip solutions allow broadcasters and rights-holders to produce clips from broadcast content, Clip Share facilitates fast and easy clipping for app users in order to drive content distribution and recirculation by viewers themselves. Leveraging computer vision to streamline clip creation and sharing provides an intuitive bridge between TV content and social media interactions.

Introduction

While much consumption of TV occurs through cable services or streaming sites like Netflix and Hulu [1], discussion and fan engagement around TV content happens on secondary platforms such as social media networks and messaging apps [2]. This disjunction
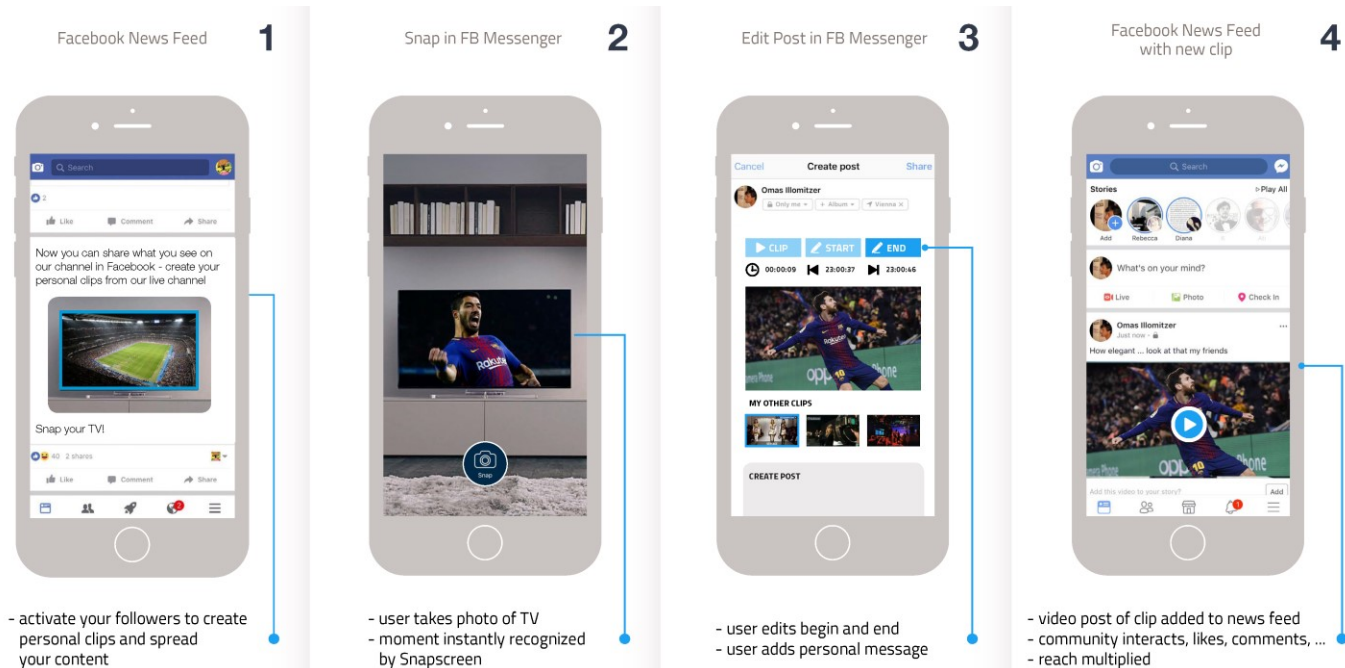
Figure 1: Clip Share integrates with Facebook Messenger to allow clip trimming and personalization directly in-app.

between modes of content delivery and viewer interaction is doubly problematic: it both builds friction into the media consumption process, and forces viewers to interact around derivative descriptions of video segments rather than sharing those segments in their original format. Twitter hashtags, for example, are utilized by millions of viewers to discuss and liveblog exciting TV moments in lieu of the ability for users to share clips of broadcasts directly as anchor points for interaction.

Second screen and companion apps have struggled to bridge this gap between TV and social media over the past decade; the TV industry has lacked a generic solution and framework that intuitively links TV content with platforms like Facebook, Twitter, and messaging apps where that content is discussed and recirculated. Without such a framework, broadcasters and rights-holders have been unable to fully capitalize on opportunities for content distribution and monetization.

Clip Share

Clip Share is an innovative computer vision solution developed by Snapscreen, a company who has been innovating around second screen and TV content distribution technologies since 2016 [3]. The Clip Share

system recognizes live or recorded TV moments through a mobile camera snapshot, then generates clips for users to rewind in time, personalize with a message, and share via social media or messaging platforms. Clip Share integrates as an SDK into native apps on the web, iOS, and Android, as well as social messaging platforms like Facebook Messenger where clips can be edited and captioned directly inside of messenger bot conversations (Figure 1). Viewers enjoy seamless sharing and discussion of video segments, while broadcasters benefit from deeper fan engagement and wide clip circulation as well as novel opportunities for content monetization.

Viewer retargeting (see Figure 2) is one powerful engagement tool available to broadcasters who leverage clip sharing. When viewers distribute a clip across their social networks, broadcasters can follow up with targeted messages or other interactions showing

those users where to find the original video in the broadcaster's video archive or OTT library. Broadcasters and rights-holders can capture further value from clip sharing by including pre- or post-roll advertisements, channel logos and brand assets, as well as promotional and informational text along with the video segments. In this way, each clip becomes a tune-in campaign built on viewers' personal commentaries and excitement around TV moments.

This bridge between TV content and social sharing is possible through Clip Share's patent-pending method of video clip generation based on image recognition algorithms for feature detection, description, and matching. The Clip Share system improves on key developments in the field of computer vision [4] in order to identify video content robustly under everyday conditions of visibility. As the proposed demonstration will exemplify, snaps taken from a variety of angles can

■ additional content monetization
■ higher reach
■ get viewers' social media profiles for retargeting

① Creates/owns Content

② Mobile savvy millennials watching

③ Viewer gets high quality clip for sharing on social media

④ Shared clip goes viral

⑤ Retarget viewers on social media
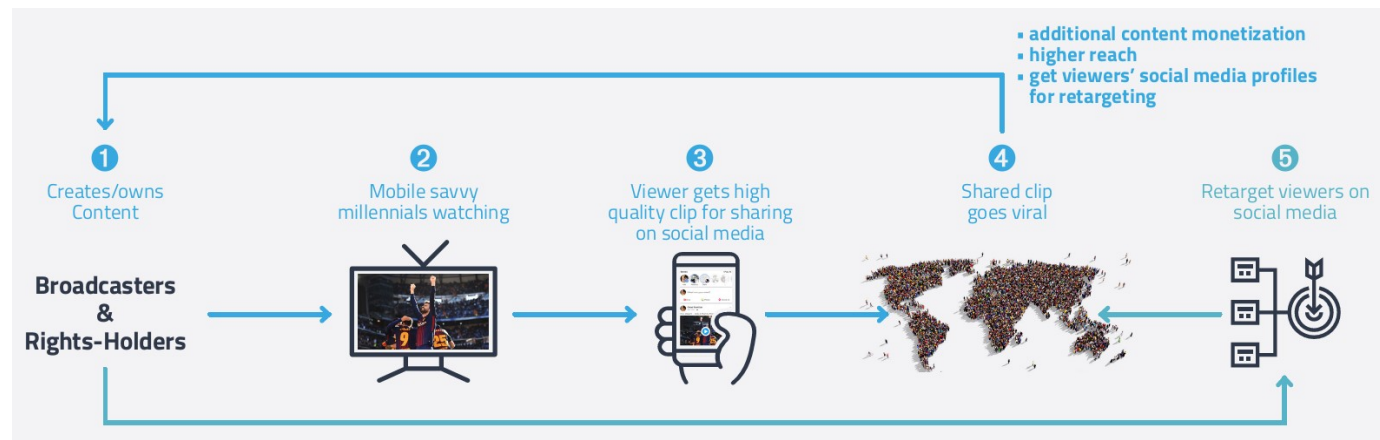
Broadcasters & Rights-Holders

Figure 2: When a shared clip gets traction on social media, Clip Share facilitates broadcasters and rights-holders to retarget viewers.

be processed successfully—the capture takes only a moment and thus is not prone to jitter or movement artefacts. Technical breakthroughs underlying Clip Share ensure a smooth user experience despite variance in usage patterns and camera quality.

System Details

The Clip Share system works by sampling the video stream signals of TV channels, then temporarily storing sampled videos in a database. On the basis of this input, a sequence of image fingerprints is extracted through binary feature description and stored in high dimensional space using techniques that support efficient, approximate nearest-neighbor searches. When a user snaps their viewing screen with a device camera, the fingerprint of the snapped image is calculated immediately on that device. A query with this fingerprint is sent to the server as input to the matching algorithm, which identifies the broadcast and outputs original-quality video segments to the user's device for editing. In total, the entire process—from fingerprint calculation on the mobile client, to transmission, to server-side matching and the return of clips—takes less than 1 second.

Through the above process, a full clip (i.e. a video scene of up to several seconds or minutes) can be generated from a single snapped image of the viewing screen and provided in original broadcast quality. Conventional recording techniques require the viewer to either preconfigure the recording in advance or risk missing a scene by hitting the "record" button too late. Clip Share's novelty lies in its elegant user experience by contrast: with a simple snapshot of the viewing screen, users can identify and share TV content through messaging apps and social media platforms.

Demonstration

The Clip Share demonstration consists of a TV display broadcasting the live BBC One channel; meanwhile, participants can choose to utilize a provided tablet or their own smart device to snap the TV from within our Facebook Messenger conversation bot. Clip Share will generate a clip from the snapped image for viewers to trim, caption, and share. Clip Share demos for Twitter[1] and Facebook Messenger[2] are also accessible online.

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[1] https://clip.farm

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