

## LET EPITOME SUMMARIZE YOUR PHOTO COLLECTION!

Paper ID \*\*\*



**Fig. 1.** Screenshot of "Select the Best!" game within the *Epitome* application.

Sharing photos with friends and family online has become very popular in recent years. People usually organize their shared photos in albums according to events or places. To tell the story of some important events in one's life, it is desirable to have an efficient summarization tool which can help people to get a quick overview of an album containing a huge number of photos.

In this paper, we present an approach for photo album summarization through a novel social game *Epitome*. This application provides an intuitive user interface as a web and mobile application and creates photo collages for Facebook photo albums. Therefore, its potential users can enjoy watching their friends' photos while playing it. As a result, the most representative photos of a user's photo album are determined which can be used as a collage or a cover photo. At the same time, our social game collects useful research data.

The scenario of the *Epitome* game is as follows. A Facebook user, who logs in to this game for the first time, allows

access to his/her photo gallery. Then, the player selects one of the two games, "Select the Best!" or "Split it!". In both games, nine consecutive photos are selected from randomly chosen Facebook albums of his friends. In the "Select the Best!" game, as shown in Figure 1, the player has to choose the best representative photo among nine images which are shown. If he/she selects the photo which is the most frequently selected by other players, then his/her score increases. In the "Split it!" game, the player splits images, shown in the time order in which they were uploaded, into two distinct parts. At the end, the results of these two games are combined to produce a collage of the user's photo album. Therefore, the player can get a feedback from his friends, regarding his/her photo albums.

Three different scores are calculated in our application: Importance, Segmentation and UserScore.

The Importance value is calculated for each photo in an album by playing "Select the Best!" game. It represents the ratio between the number of times that a photo was voted for and the overall number of times it was shown in the game. Therefore, Importance shows the distribution of the most representative photos within one Facebook album. In "Split it!" game, the Segmentation value is determined for each photo in one album in an analogous way as explained for Importance value. It shows the frequency with which each photo in one album is selected as a starting photo in a new segment.

Finally, Importance and Segmentation are used to automatically select the five most representative photos within one photo album. At first, four maximum values of Segmentation from one Facebook album are determined in order to split that album into the five most probable segments. For each of these segments, a photo with the highest Importance value within that album is chosen. These five photos represent an album collage, which is then shown to the owner of that album, if he/she reaches a certain UserScore.

Using a UserScore, players are motivated to play our game more frequently. For example, in the "Select the Best!" game, every time the player selects the photo which has the highest Importance value among nine photos, his/her own UserScore increases. Similar to this, in "Split it!" game, the player increases his/her UserScore, if he/she splits nine photos at the place where Segmentation has the highest value. All users scores are sorted to derive ranking of the players in *Epitome* application.