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Research note

A method for evaluating the creativity of comic strips

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ABSTRACT

Creativity evaluation is critical to product production. This study proposed a scientific-based approach for evaluating creativity. We proposed to determine objectively the creativity level of a comic strip by measuring the degree of diversity of links distribution of Linkography. In Linkography, each move recorded in a graph denotes a concept or idea, and a link represents a connection between two moves, producing a kind of undirected triangular graph. Linkography was originally invented for recording concepts in a collaborative design. Similar to collaborative design, key frames in an animation can be viewed as moves in Linkography. Two experiments were performed to test this approach. Several comic strips were chosen as experiment material and three experts were invited to participate in study 1. In a Linkography, average distance between cluster centers (AD) and the coefficient of variance of number of links (CV) were defined as two creativity indicators and determined by solving the five equations which represents the creativity level of five comic strips. The experiment in study 2 was conducted to verify the effectiveness of AD and CV. Comparing the results of questionnaires with the creativity as calculated by indicators AD and CV; over seventy percent of the results generated from the two methods were consistent. The results of the two studies confirm that the clustering method and the two creativity indicators, AD and CV, are feasible for evaluating the creativity level of a comic strip.

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1. Introduction

Researchers have devoted much effort to study creativity and have reported on their studies in the literature. Some focused on the characteristics of creative people (Jackson & Messick, 1965; Stein, 1953); others studied the relations between creativity and personality (Chávez-Eakle, Eakle, & Cruz-Fuentes, 2012; Sternberg, 2012; Sternberg, O'Hara, & Lubart, 1997). Chen and Kaufmann (2008) stated creativity has many synonyms, such as productive thinking, divergent thinking, originality, imagination, brainstorming, etc. and other reports covered still further efforts on investigating the requirements for creativity (Cropley, 1967; Runco & Jaeger, 2012). To simulate the generation of creativity, Ogle (2007) proposed an idea-spaces model and considered the breakthrough of creativity as being associated with the nodes that show the connections indicating relations with others in the network. Fernandes, Vieira, Medeiros, and Jorge (2009) defined creativity as the ability to come up with novel ideas that promote innovation; Ang and Low (2000) described creativity as something novel, divergent from the norm, unique, original, meaningful, valued added, and acceptable; Barron (1955) straightforwardly defined creativity as originality. Chen and Kaufmann (2008) argued the concept of creativity is dynamic and complex.

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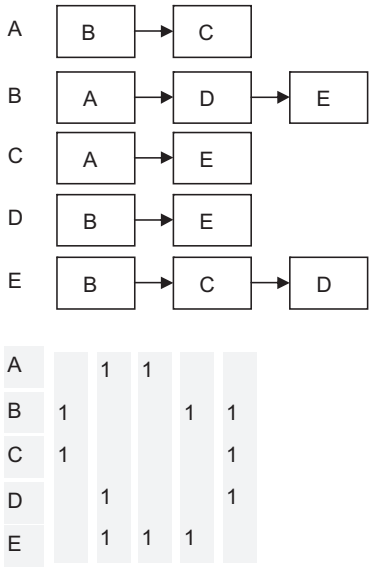

Fig. 1. Interrelationship of five nodes (ideas) in linked list and matrix format Linked list, matrix for 5 nodes.

Although many definitions of creativity have been proposed (Ang & Low, 2000; Barron, 1955; Kampylis & Valtanen, 1972), the definition of creativity for artwork in a specific form, such as animation, commercial advertisement or short animation film, has not been thoroughly discussed and requires more research in order to scrutinize the methodology of creativity assessment for new media. In addition to study of the core concept of creativity, the development and application of measuring tools for poems, artifacts, drawing skill, advertising and culinary process have been reported (Ang & Low, 2000; Chan & Zhao, 2010; Horng & Hu, 2009). Mumford (2003) emphasized that creativity is the criterion of interest for the production of novel, useful products. As digital media, including computer apps are digital comic strips, are more and more popular, the creativity evaluation of new media becomes an important research issue.

Guilford (1950) was the first to propose that creativity can be assessed in a quantitative and objective way. Furthermore, Runco and Jaeger (2012) argued that the field of creativity studies should rely on scientific method. Batey (2012) suggested a heuristic framework, which adopted a three-dimensional matrix to measure creativity. Goldschmidt (1990) invented Linkography and proposed its use to assess design productivity. Taking the entropy of Linkography into consideration, Kan and Gero (2005) proposed a scientific method to measure the creativity level of collaborative team work. Entropy, as a concept, implies a degree of disorder or randomness.

Note that in the Kan and Gero (2005) method, entropy was defined as the degree of irregular distribution of links and was used to represent the creativity potential in a Linkography. Based on Kan and Gero's work (2005), Chou (2007) developed a revised version to calculate entropy. The Consensual Assessment Technique (CAT) developed by Amabile (1996) was a commonly used rating tool and has been widely tested (Kaufman, Baer, Agars, & Loomis, 2010). Rastogi and Sharma (2010) compared various creativity measurement methods, such as CCS (Composite Creativity Score) and FCI (Frequency Creativity Index). Besemer and O'Quin (1986) invented a CPSS (creative product semantic scale) model for measuring the creativity embodied in a product. In general, most of the aforementioned creativity assessment scales take into consideration the degree of diversity thinking.

The aforementioned literature mentioned divergent thinking (DT) as an effective tool for measuring an individual's creativity. Meanwhile, in CAT, the creativity of products was usually judged by experts in the relevant field. In this paper, we took the core conception of CAT; domain experts were invited to participate. We also defined diversity thinking as the connotation difference between two frames in a comic strip. By considering the status of links distribution in Linkography as diversity thinking of links, we developed an approach to evaluate the creativity of comic strips. Basically, this study seeks to find a scientific creativity evaluation method through the use of Linkography.

2. Graphical representation of concepts

How to record the concepts from group members in a team is an important issue. Theoretically, every idea from participants can be seen as a node, and the overall interconnection relationships constitute a sort of undirected graph. Several approaches from a data structure perspective in information technology offer good resources to consider. For example, linked list, binary search tree (BST) and run length encoding (RLE) are some typical techniques for recording the information about the relation between nodes. As shown in Fig. 1, the interrelations of five nodes A–E are represented in a linked list and a matrix.

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