Creative Computing: A Primer

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Abstract Creative computing is an emerging discipline that combines the theory and methodology of both computing and media arts. This computing is supposed to be applied to solve practical problems. Creative computing is about creativity. It emphasizes the knowledge and practices needed by the young people to create various types of dynamic and interactive media that they enjoy on daily basis. This paper provides a brief introduction into creative computing.

Keywords creative computing, computational creativity

Introduction

Computers may be regarded as digital machines programmed by software and meant to serve users. Computing plays a crucial role in our lives, workplaces, and schools. Developing computing skills and concepts is no longer considered as optional even for non-STEM majors. There is an explosive and ever-growing use of computing in business and commerce. It is becoming of increasing interest to artists, musicians, and other creative practitioners. Other applications of computing include museums, ubiquitous and embedded computing, robotics, engineering control systems, and human computer interaction [1]. It has been used almost everywhere, especially in creativity field.

Creative computing refers to the interdisciplinary field that combines computing and engineering with principles of creative arts, allowing one to explore through a combination of technology and imagination. It touches several opportunities within the digital economy, including software engineering, web design, mobile application, 3-D modeling and animation, scientific visualization, and social media. It has the ability to generate fresh and useful services and experiences for users so as to achieve effective performance in different fields. Creative computing is related to other kinds of computing as shown in Figure 1 [2]. There are many different tools commonly used for creative computing. The most popular is Scratch, which is a free computer programming language developed MIT [3]. Scratch enables young people to create their own interactive media like stories, games, and animation.

Concept of Creative Computing

Modern problems are too complex for human beings to solve without computing tools.
Creative computing involves the combination of different types of knowledge from various disciplines to solve problems. Creative computing is the intersection of three industries: computing, creativity, and knowledge [4].

- *Computing*: This has been a good servant supporting creativity. Creative computing has decisive advantage in high computing power. Computing is constantly addressing the question of how best to serve human creativity.

- *Creativity*: This is an ability to achieve creative ideas. Therefore, creativity is required to create fresh and useful services. Creative computing tends to reconcile the objective precision of computer systems with the subjective ambiguity of human creativity. Chaos and fractal can be used as tools to achieve the creativity [5]. Computer technologies significantly aid creativity.
- *Knowledge Engineering:* This constructs knowledge based systems in engineering discipline. This contains aspects such as technical, scientific, and social for building and maintaining computer-aid design or expert system than in appropriate method or languages [6].

Applications of creative computing include decision making, tourism, and music composition.
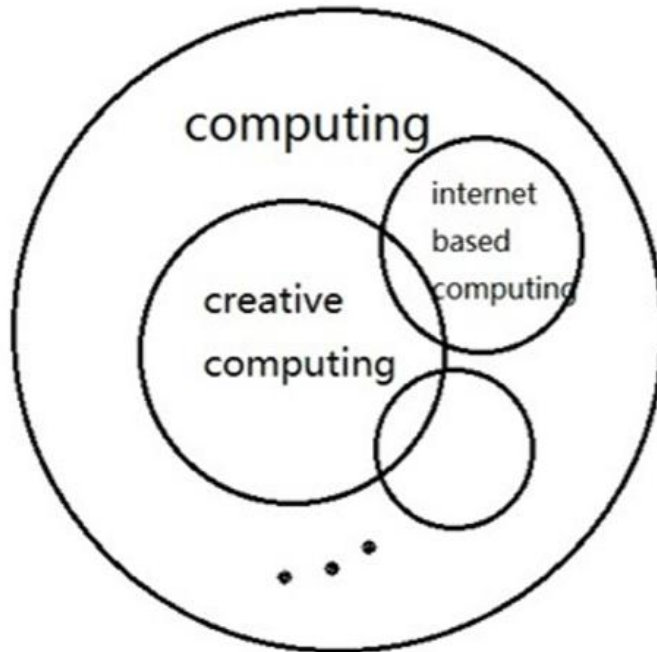

Figure 1: The relationship between creative computing and other kinds of computing [2]

Benefits and Challenges

Creative computing has enabled broad, effective use of computers in many domains, while combined knowledge is playing key roles in most of them. The combined knowledge provides the basis of creativity on generating new ideas and solutions.

Creating, designing, and building with computers have been recognized as important activities for children. This makes it important than ever before that every child gains access to computing and the learning experiences it offers.

Some argue that creative computing is essentially a software engineering challenge.

A conventional approach to setting standards for creative computing will not work because creativity itself is inherently not standardizable [7].

Conclusion

The main concern of creative computing is improving human creativity through computing in creative ways. Creative computing is being widely accepted with the hope of producing fresh, surprising, and useful computing products.

Many universities around the world have established specific programs and courses on creative computing to develop professionals. A major or degree in creative computing will prepare one to be a creative thinker and be able to take an active role in developing computational systems for use in the arts, music, film, visual arts, computer games, and digital media and other areas of the software industry that require creative individuals [8].

More information about creative computing can be found in books in [9-10] and the

quarterly journal exclusively devoted to it: *International Journal of Creative Computing*

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