

# CreaTology: Patterns in Digital Creative Arts

## Editorial

Special Session along with PATTERNS 2020  
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**Abstract**—This special session presents research work on patterns in interdisciplinary areas, such as social network analyses, creative deception, and musicology with stringology. The work presented here is encouraging and opens up opportunities for potential further research and development.

**Index Terms**—information diffusion; posts; reposts; walls; social networks; social media; probability; mathematical modelling; Temporally annotated sequence; Creative; Deception; Lyndon word; Musicology; Notation pattern; Stringology; Structure of music score; V-word.

### I. INTRODUCTION

The year 2020 is special. We feel particularly privileged to attend the PATTERNS2020 despite the pandemic time. This special session CreaTology2020 continues the ideas from the previous special session Pattology2017. The topics focus on various patterns inherent in systems for better understanding, modelling, representing and computing digital arts in broad terms.

Our research fields become more and more interdisciplinary. It can sometimes be necessary to combine research forces in various disciplines, such as creative arts, computer science, data science, engineering, mathematics, biology and psychology. This can reveal underlying patterns and structures, more importantly, to extract useful information. Collaborations can evolve new techniques, solutions, research directions, and impacts.

Social networks, equipped by social media technologies, have changed our lives. Our world becomes highly digital, densely connected and requires sophisticated techniques for managing, manipulating, interpreting, indexing, storing and processing various scales of data. Data can enable us to better understand ourselves and our environments.

### II. SESSION OVERVIEW

All paper submissions are relevant to the interests of this session CreaTology2020. Here we explore patterns in three particular interdisciplinary application research areas: social network analyses, creative deception, and musicology.

Social network analyses have existed for a long time before the digital age. On-line social network services make analyses far more feasible and popular. However, despite the large number of publications, many questions remain unanswered. For example, the majority of messages on social media are in fact reposted by readers, not by original authors. Why do people repost messages? How likely is the repost action motivated by interests rather than by influences?

The paper “Diffusion Patterns of Social Network Posts” by A. Gubanov et al. [1] investigates the patterns in social network posts. Their research aims to answer such questions as above and to find practical solutions. Existing techniques tend to rely on large data sets and explicit information. Social contexts are over-simplified in models. However, in reality high degree nodes (users) do not necessarily offer richer information. Nodes can be faked by web robots (application agents over the Internet) and ties (friendships) can be biased or hidden. The authors explore some diffusion patterns of social network posts and try to gain insight into the problem of information diffusion. They propose a four-parameter mathematical model for information cascades on small localised data. Future research directions are also identified and discussed in the paper.

Artificial Intelligence can offer higher efficiency in communications, for example, Chatbots are increasingly used to offer customers 24/7 services. However, the automation techniques can also be turned into evil, such as Spambots. The paper “Spambots: Creative Deception” by H Alamro et al. [2] look

at the creativity of the spammers. The authors explore the patterns of malicious actions, such as repetitions, and variable time delays. The solutions are then proposed including linear time-and-space detection algorithms. The paper shows how analyses of patterns can be rewarding, and how data structures and algorithm design techniques can be applied to solve real-world problems effectively.

Patterns in music analyses are important especially for historical music. The paper “Concepts for Computing Patterns in 15th Century Korean Music” by S Moon et al. [3] has successfully identified interesting patterns in some ancient Korean music scores in terms of Lyndon words and V-words [4]. Lyndon words and V-words are mathematical structures with interesting combinatorial properties. The paper addresses computational musicology and has initiated the application of stringology techniques for analysing classical Korean musical patterns exhibited in the associated music scores. As primitive Lyndon words were previously identified in some African music and V-words were found in some rhythmic pattern in Aka Pygmies music [5], this research opens up promising new directions for further studies.

### III. CONCLUSION

All work presented here is encouraging and opens up opportunities for potential further research and development. Social networks have profoundly changed our lives and social network analysis offers more understandings about ourselves as a human society. We are more connected than ever before. Valuable human creativity and technological advance in Artificial Intelligence can, if unguarded lead to uncertain outcomes and we need to protect ourselves. Arts including music and science and technology are more than ever linked together.

### ACKNOWLEDGMENT

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