Pattern recognition for cultural heritage: a research overview

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Abstract:
Cultural heritage refers to all the tangible and intangible elements of public interest and historical, archaeological, social and artistic relevance, and has become an essential part of the everyday life. In order to extract knowledge from the cultural heritage, approaches of pattern recognition have been used for modelling, analysing and exploring features, relationships and trends from the cultural heritage data for advancing hypotheses and discovering relevant information. Accordingly, the aim of this talk is to provide an overview of the current literature in pattern recognition for cultural heritage preservation. Specifically, a background description will be presented about intelligent systems, machine learning approaches, image processing, human-computer interaction and statistical analysis applied to the cultural heritage. Then, as a case study, a special focus will be given to visual pattern extraction and recognition from Leonardo Da Vinci's Mona Lisa, one of the most important international pieces of art. In that sense, state-of-the-art works in the areas of image analysis and human-computer interaction will be discussed, advancing hypotheses about the identity, ambiguity and hidden features of Mona Lisa's portrait, for shedding light on a fascinating mystery still partially unsolved in the art history.

Short Biography:
Alessia Amelio received a Ph.D. in Computer Science Engineering and Systems in 2013 from University of Calabria, Italy. From 2011 to 2015, she obtained a research position at the National Research Council of Italy (CNR) in Computer Science Engineering. From 2016 to 2019, she obtained a research position in Computer Science Engineering at the Department of Computer Science (DIMES) of the University of Calabria. Currently, she is a senior researcher in Computer Science Engineering and Systems at the Department of Engineering and Geology, University "G. d'Annunzio" Chieti-Pescara, Italy. She was co-organiser of different scientific events, such as workshops and invited sessions in pattern recognition and machine learning. In particular, she organised the VIPERC 2019 and 2020 workshops and she is currently chair of VIPERC 2022 conference about Visual Pattern Extraction and

Recognition for Cultural Heritage Understanding. She is editorial board member of different journals and has been program and technical committee member of different conferences in Computer Science Engineering. She is co-author of more than 100 papers in the topics of pattern recognition and machine learning, with more than 30 journal papers indexed in SCOPUS and Web of Science. Her research interests are mainly focused on pattern recognition and machine learning approaches in different fields and on different data types, e.g. images, documents, sensor data, data from human computer interaction, social network analysis and mining.

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