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Journal of Engineering Science and Technology • Volume 17, Issue 3, Pages 2104 - 2119 • June 2022

Document type

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Source type

Journal

ISSN

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A DEEP-LEARNING FRAMEWORK FOR ACCURATE AND ROBUST DETECTION OF ADULT CONTENT

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Abstract

Video streaming services has dominated the growth of Internet traffic, which accounts for more than 82% of global network traffic. As videos represent a powerful medium for user engagement, there has been an exponential growth in the different forms of video content being generated and distributed. Such a large diversity of content includes educational, gaming, historical, and entertainment among others. While the positive impact of these video services available through Internet has benefitted a large number of citizens, it is evident that the same platform has been subjected to misuse for the propagation of explicit content not suitable for children. Therefore, it is crucial to develop automated solutions that can successfully filter such content to protect children and vulnerable individuals. Over the last few years, deep learning algorithms have achieved high accuracy in object recognition in comparison to the statistical algorithms trained on hand-crafted features. The deep-learning algorithms has demonstrated the ability to automatically select most representative features to be extracted from visual representation of objects. While this technology has been successfully applied to many important computer vision problems, its use for the classification and filtering of adult content has not been fully explored yet. Addressing this challenge, the research presented in this paper reports a deep-learning framework that exploits spatio-temporal and visual features of video sequences for efficient and effective detection of adult content. The proposed network architecture aims at harvesting information from two important aspects of video content: spatial self-learned features and cues from temporal redundancies and dynamics in videos. First, a Convolutional Neural Network (CNN) architecture based on Inception-v3 is used to model and learn the spatial video features. This CNN architecture builds the basis of the proposed deep-learning framework. Temporal characteristics are then modelled through a long-term short memory approach that correlates information from subsequent frames in the processed video clip. The proposed approach has been 1ne accuracy of the proposed approach reaches 97.4%, while the recall is 97%, making it highly suitable for practical applications. © School of Engineering, Taylor's University.

Author keywords

Adult content; Convolutional neural network; LSTM network; NPDI dataset; Video classification

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Journal of Engineering Science and Technology

COUNTRY

Malaysia



Universities and research institutions in Malaysia

SUBJECT AREA AND CATEGORY

Engineering
Engineering
(miscellaneous)

PUBLISHER

Taylor's University



Taylor's University in Scimago Institutions Rankings

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PUBLICATION TYPE

Journals

ISSN

18234690

COVERAGE

2009-2021

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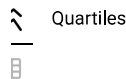
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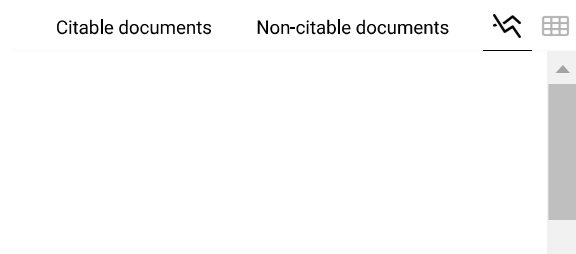
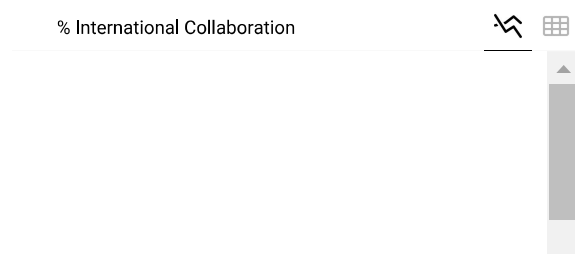
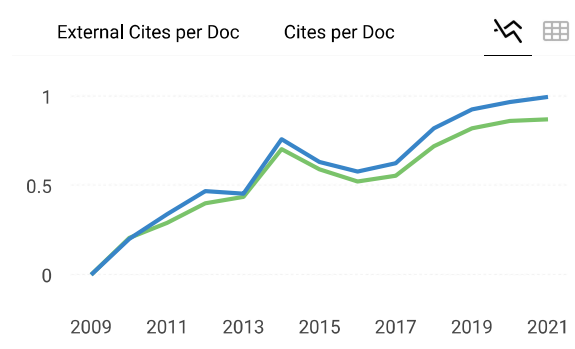
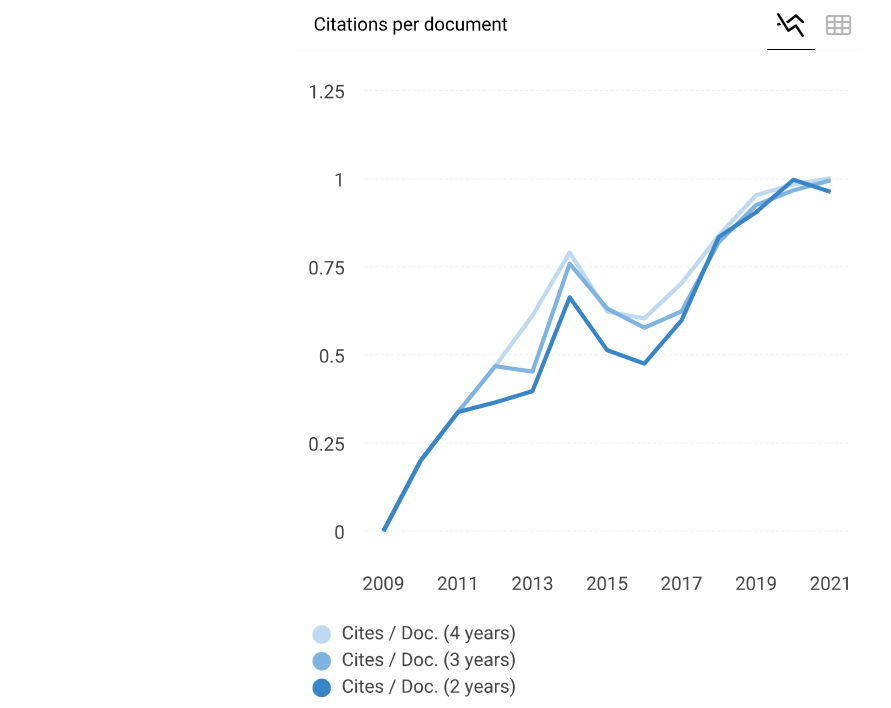
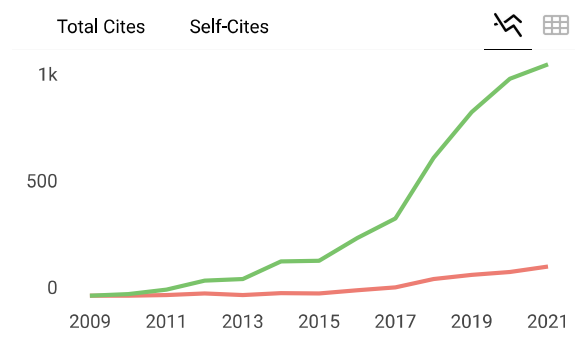
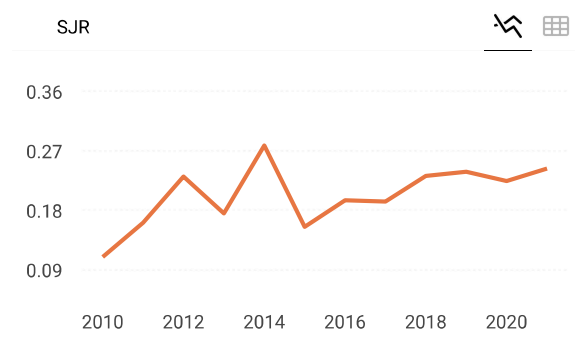
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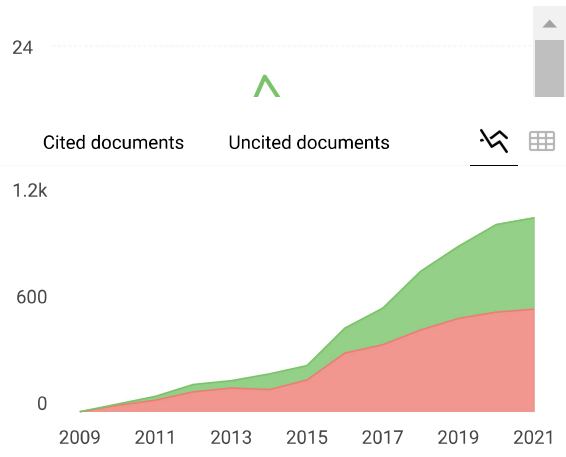
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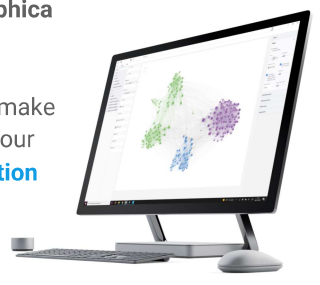
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