Vellore Institute of Technology, India and Binghamton University, USA

Cordially invite you for the

Joint Webinar Series on
Artificial Intelligence and Machine Learning

Image Authentication from Perspective of Deep Learning Technique

6:30 pm to 7:30 pm (IST) on October 22, 2020

Zoom Meeting Link:

https://chennai-vit.zoom.us/j/99832492738?pwd=M3U5OExTSE9STTYrcDZNT0lMc3R4Zz09

Meeting ID: 998 3249 2738 & Passcode: 826160

Abstract: Imaging technology has taken remarkable strides in recent years, and digital images can now be snapped from a range of handheld devices, like the mobile, wearables, tabs, and camcorder. These images are shared on social networks day in and out. On the other hand, software tools for photo editing have seen a new rise since the inception of social networks and filtering is just a few clicks away on a smartphone. These modern advancements in image editing tools have eroded the trust of digital images, thereby challenging the integrity and authenticity of the image. These technologies enable any amateur user to enhance their images on the fly that makes an impact and concern in the digital forensics community. Two fundamental questions are to be answered in digital image forensic analysis. First and foremost, is to identify whether the given Image is altered or not? Secondly, does the given image is acquired from the specified source camera model or not ?

To promote value additions to the solutions on the aforementioned questions and to strengthen the image forensic analysis. The Anti-Forensic Contrast Enhancement

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Detector (AFCED) is a method used to detect whether the given image is altered or not. The existing standard detectors perform well for tampered images, but the performance of the same detector degrades when subjected to Anti-forged images specifically using contrast enhancement. The AFCED overcomes this degradation and performs better even though the image is subject to tampered and anti-forged. AFCED uses image collections from Dresden and wiki-art dataset to build a classifier to classify tampered and untampered images. On the other hand the Source Camera Identifier (SCI) is a deep net framework intended to identify the given image that belongs to a specific camera or not. SCI tried to characterize and learn the subtle pattern/signature of the camera using deep networks, the proposed SCI is framed with two functional blocks of deep nets namely, the Normalized Residue extractor (NRE) and Source Camera Identification (SCI) network. This unified architectural representation of the SCI framework could be treated as a general deep net framework to learn the subtle noise pattern of a given camera.

Biography: Rajesh Kanna Baskaran is a Professor, School of Computer Science and Engineering, Vellore Institute of Technology (VIT), Chennai, India since 2012. He had worked at St Joseph's, VLB Janakiammal, and Mepco Schlenk Engineering Colleges prior to joining VIT. His research interests include digital image analysis, Deep learning, Hypergraph based models of images, and Image forgery detection. He currently explores the incorporation of Deep neural networks in microbial analysis to curb the accelerated progress against the global burden of malaria and tuberculosis. His doctoral dissertation on the Development of Hypergraph-based Models for Selected Image Engineering Applications has a couple of innovative models for contour-based image analysis and proved the efficiency of those models through experiments. ACM SIGSOFT has chosen him as one of the researchers to receive a travel scholarship to attend the ACM A.M. Turing Centenary celebration held at San Francisco, California, during June 15-16, 2012. His work on parallelism in noise removal won the Best poster award at 22nd International Symposium on High-Performance Parallel & Distributed Computing, June 17-21, 2013 at New York. He has co-authored many research publications, book chapters, and a book in reputed Journals and Conferences.