

EUVIP2021 Tutorial Proposal

DeepFake – Creation, Detection and Generalization

By

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Overview and objectives of the tutorial

The ultra-realistic content creation capabilities for DeepFakes could endanger various societal functions such as propaganda spreading for threatening democracy. Although, it is true that there are only a few documented cases in which DeepFakes have had a significant negative impact on democratic processes, the threat cannot be overlooked. While number of works have been proposed in recent past for detecting the DeepFakes, there are constantly challenged by newer DeepFake generation mechanisms. One of the critical challenges in devising a reliable DeepFake detection approach is the problem of generalizability across different datasets and across different generation mechanisms.

In this tutorial we will first provide the audience with an in-depth overview of current state-of-art for DeepFake generation. We will first discuss on advantages and limitations of the various approaches and list out few new directions for DeepFake generation. We then proceed to detection approaches where we will present the approaches based on classical machine learning and deep learning. We will supplement the tutorial with sample code for the participants who wish to try out the DeepFake detection.

Biographical Sketch

Kiran Raja obtained his PhD in computer Science from Norwegian University of Science and Technology (NTNU), Norway in 2016. He is faculty member at Dept. of Computer Science at NTNU, Norway. His main research interests include statistical pattern recognition, image processing, and machine learning with applications to biometrics, security and privacy protection. He was/is participating in EU projects SOTAMD, iMARS and other national projects. He has authored several papers in his field of interest and serves as a reviewer for number of journals and conferences. He is a member of EAB and chairs Academic Special Interest Group at EAB.