



Deep Learning Approaches Face Analysis

Prof. Dr. Nafiz ARICA

Dean, Faculty of Engineering and Natural Sciences, Bahçeşehir University, Beşiktaş-Istanbul

Abstract:

Deep learning has shown impressive performances in many problems of artificial intelligence including face analysis which has been a challenging task in computer vision for decades. Face analysis has various application areas such as video surveillance, human-computer interaction and driver fatigue detection. In this talk, I will give a brief overview of deep learning approaches in face analysis. After detecting the face regions in an input image the first step is to pre-process those regions for the subsequent stages. Although the pre-processing operations differ based on the application of analysis I will be focusing on the deep learning methods developed for face alignment, pose estimation, face formalization and face super-resolution problems. Other subjects in the talk are related to face attribute estimation, face expression and emotion analysis and face recognition. Face attributes include age, gender and other attributes such as glass/no glass and beard/no beard. In facial expression/emotion analysis I will discuss the methods in recognition of prototypical facial expressions, i.e. anger, disgust, fear, happiness, sadness and surprise in addition to facial action units. The face recognition part of the talk covers both the identification and verification problems. The talk will focus on state-of-the-art deep learning studies in each face analysis problem after grouping the main approaches. Finally I conclude my talk with the challenges and future works on face analysis.

Biography:

Dr. Nafiz Arica worked in the University of Illinois at Urbana Champaign, Urbana, IL, USA Beckman Institute for Advanced Science and Engineering Postdoctoral Research Associates (February 2006- April 2007) Worked with Prof. Narendra Ahuja and conducted research on Learning based Visual Attention, Perceptual Grouping, Hierarchical Image Segmentation; Object Detection and



Categorization.

Publication of speakers:

- Nafiz Arica, Fatoş Yarman-Vural, “BAS : A Perceptual Shape Descriptor Based on the Beam Angle Statistics”, Pattern Recognition Letters, Vol. 24, pp.1627-1639, 2003.
- Nafiz Arica, Fatoş Yarman-Vural, “Optical Character Recognition For Cursive Handwriting”, IEEE Trans. Pattern Analysis and Machine Intelligence, vol. 24, no. 6, pp. 801-813, 2002.
- Nafiz Arica, Fatoş Yarman-Vural, “An Overview of Character Recognition Focused on Off-line Handwriting”, IEEE Trans. Systems, Man and Cybernetics, Part C: Applications and Reviews, vol.31, no.2, pp.216-232, 2001.
- Nafiz Arica, Fatoş Yarman-Vural, “One Dimensional Representation of Two Dimensional Information for HMM Based Handwritten Recognition”, Pattern Recognition Letters, vol.21 pp. 583-592, 2000.
- Nafiz Arica, “Cyclic Sequence Comparison Using Dynamic Warping”, International Conference on Image and Video Retrieval, (CIVR 2005), (also published in Lecture Notes in computer Science, Volume 3568).

International Conference on Artificial Intelligence, Automation & Robotics; August 26-27, 2020; Dubai, UAE.

Citation: Prof. Dr. Nafiz ARICA, Dean, Faculty of Engineering and Natural Sciences Bahçeşehir University, Beşiktaş-Istanbul; Artificial Intelligence 2020; August 26-27, 2020; Dubai, UAE.