Report on ISCA Distinguished lecture organized at Chhotubhai Gopal bhai Patel institute of Technology, UTU on 29th February, 2020

Title: Biometric Spoofing attacks for automatic speaker verification

Expert: Dr. Hemant Patil

Profile of Speaker:

Prof. Hemant A. Patil (ISCA Distinguished Lecturer 2020-2021)

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Hemant A. Patil received Ph.D. Degree from the Indian Institute of Technology (IIT), Kharagpur, India, in July 2006. Since 2007, he has been a faculty member at DA-IICT Gandhinagar, India and developed Speech Research Lab at DA-IICT recognized as ISCA speech labs. Dr. Patil is member of ISCA, IEEE, IEEE Signal Processing Society, IEEE Circuits and Systems Society, EURASIP, APSIPA and an affiliate member of IEEE SLTC. He is regular reviewer for ICASSP and INTERSPEECH, Speech Communication, Elsevier, Computer Speech and Language, Elsevier and Int. J. Speech Tech, Springer, Circuits, Systems and Signal Processing, Springer. He has published around 240+ research publications in national and international conferences/journals/book chapters. He visited department of ECE, University of Minnesota, Minneapolis, USA (May-July, 2009) as short term scholar. He has been associated (as PI) with three MeitY sponsored projects in ASR, TTS and QbE-STD. He was co-PI for DST sponsored project on India-Digital Heritage (IDH)-Hampi. His research interests include speech and speaker recognition, analysis of spoofing attacks, TTS, and infant cry analysis. He has received DST Fast Track Award for Young Scientists for infant cry analysis. He has coedited two books with Dr. Amy Neustria (EIC, IJST Springer) with titles, Forensic Speaker Recognition (Springer,2011) and Signal and Acoustic Modeling for Speech and Communication Disorders (DE GRUYTER, 2018). Presently, he is coediting two books on speech technology for medical domain. Dr. Patil has taken a lead role in organizing several ISCA supported events, such as summer/winter schools/CEP workshops (on theme as speaker and language recognition, speech source modeling, text-to-speech synthesis, speech production-perception link, advances in speech processing) and progress review meetings for two MeitY consortia projects all at DA-IICT Gandhingagar. Dr. Patil has supervised 04 doctoral and 42 M.Tech. Theses (all in speech processing area). Presently, he is supervising 03 doctoral students. Recently, he offered a joint tutorial with Haizhou Li during Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC) 2017 and INTERSPEECH 2018. He offered a joint tutorial with H. Kawahara on the topic, "Voice Conversion: Challenges and Opportunities," during APSIPA ASC 2018, Honolulu, USA. He has been selected as APSIPA Distinguished Lecturer (DL) for

2018-2019 and he has 20 APSIPA DLs in three countries, namely, India, China and Canada. Recently, he is selected as ISCA Distinguished Lecturer (DL) for 2020-2021.

Audience of the Talk

Faculty members from Electronics and Communication Department, computer department, information technology department and M.SC. IT department.

Abstract of the talk

Speaker recognition verifies or identifies a speaker via his/her voice. Automatic Speaker Verification (ASV) involves verifying the claimed speaker's identity. In practice, we would like a speaker verification system to be robust against variations, such as microphone and transmission channel, intersession, acoustic noise, speaker ageing, etc. This robustness makes ASV system to be vulnerable to various spoofing attacks as it tries to nullify these effects and make spoofed speech more close to the natural speech. Hence, we would like the system to be secure against spoofing attacks. In this talk, difference issues concerning the robustness and security of a speaker verification system were discussed. We also discuss the latest progress and the research activities in anti-spoofing countermeasures against voice conversion (VC), speech synthesis (SS), replay, twins and professional mimics. In particular, brief details of risk and technological challenges associated with each of these attacks were discussed. The talk also gave brief overview of two international challenge campaigns, namely, ASV Spoof 2015 and ASV Spoof 2017 organized during INTERSPEECH 2015 and INTERSPEECH 2017, respectively. Finally, the talk concluded with overall summary of current state-of-the-art in this field and discuss future research domain.

Glimpse of Talk