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IEEE Singapore Systems, Man and Cybernetics Chapter

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| TOPIC | : | Spoken Lecture Processing |
| SPEAKER | : | Dr. Ebru Arisoy, Assistant Professor, Department of Electrical and Electronics Engineering, MEF University, Turkey |
| DATE | : | 20 January 2020, Monday |
| TIME | : | 3pm to 4pm |
| VENUE | : | EA-06-05, Engineering Block EA, Faculty of Engineering, NUS |

ABSTRACT

The widespread usage of online lecture videos introduces the need for effective dissemination and utilization of video lectures, which can be accomplished through speech and language processing technologies. In the context of spoken lecture processing, speech recognition has been mainly used to automatically transcribe academic lecture recordings to enhance the learning experience of students as well as to increase accessibility for the hearing impaired students. Speech retrieval, the task of retrieving audio/video clips related to a query, has also been used to facilitate learning through academic lecture recordings. In addition, question answering, the task of automatically finding the relevant answers to textual or spoken questions from a text or spoken document, can be beneficial.

This talk will present recent research efforts on developing a spoken lecture processing system for lecture videos recorded in Turkish and English. The developed system has automatic speech recognition (ASR), speech retrieval and question answering (QA) components. QA on spoken documents is typically performed by transcribing spoken content with an ASR system and then applying text-based question answering methods to the ASR transcripts. ASR transcripts of lectures are longer than the passages used in reading comprehension task and they contain recognition errors. These challenges degrade the performance of QA systems drastically. In this talk, after explaining the basic components of the system, we will present methods proposed for improving the performance of QA on spoken documents. The proposed methods are (i) splitting the transcriptions of lecture videos into short passages and determining passage-question matching using question aware passage representations; (ii) mitigating the effects of ASR errors on QA using uncertainty-aware representations extracted from confusion networks. Both methods are integrated into an end-to-end question answering system that works on ASR transcripts.

BIOGRAPHY



Dr. Ebru Arisoy received the B.S., M.S., and Ph.D. degrees from the Electrical and Electronics Engineering Department, Bogazici University, Istanbul, Turkey, in 2002, 2004, and 2009, respectively. She worked as a Post-Doctoral Researcher at IBM T. J. Watson Research Center, Yorktown Heights, NY from 2010 to 2013. Then she moved to IBM Turkey. At IBM, she had a key role in developing language modeling approaches for Voice Search and Mobile Dictation applications. Since 2014, she has been working as an assistant professor in Electrical and Electronics Engineering Department at MEF University, Istanbul, Turkey. Her main research interests include automatic speech recognition, statistical language modeling, and speech and language processing for educational technologies.