

AI Convergence Network & Artificial Intelligence Colloquium

TITLE Deep Learning for End-to-End Communications

When : 2021.12.23.(THU) A.M.11:00~

Where : Zoom

링크 <https://zoom.us/j/98276658445?pwd=bINFNDFoTGhYcDNxbGtCU1h4SnVHZz09>

회의 ID: 982 7665 8445, 암호 : 3647

Speaker : Prof. Mojtaba Vaezi (Villanova University)

Abstract : Deep learning has successfully been applied to many communication problems in the physical layer. Using deep learning for End-to-End Communication is, however, a novel concept with significant potential. Particularly, Deep Autoencoder (DAE)-aided communication has shown to be very competitive to the traditional block-based communication. In this presentation, we introduce the applications of DAEs in communication systems and discuss state-of-the-art applications of DAEs for point-to-point multiple-input multiple-output (MIMO) channels. Specifically, we show that embedding left- and right-singular vectors of the channel matrix into the DAE encoder and decoder further improves the performance compared to the state-of-the-art in terms of bit error rate (BER). A proper DAE design can largely outperform Shannon-theoretic-based Linear precoding in terms of BER. We also discuss future directions in this road including using DAEs for interference management.

BIO : Mojtaba Vaezi (S '09-M '14-SM '18) received the B.Sc. and M.Sc. degrees from Amirkabir University of Technology (Tehran Polytechnic) and the Ph.D. degree from McGill University all in Electrical Engineering. From 2015 to 2018, he was with Princeton University as a Postdoctoral Research Fellow and Associate Research Scholar. He is currently an Assistant Professor of ECE at Villanova University. Before joining Princeton, he was a researcher at Ericsson Research in Montreal, Canada. His research interests include the broad areas of signal processing and machine learning for wireless communications with an emphasis on physical layer security and fifth generation (5G) and beyond radio access technologies. Among his publications in these areas is the book Multiple Access Techniques for 5G Wireless Networks and Beyond (Springer, 2019).

Dr. Vaezi is an Editor of IEEE Transactions on Communications and IEEE Communications Letters. He has co-organized six NOMA workshops at IEEE VTC 2017-Spring, Globecom '17, '18 and ICC '18, '19, '20. He is a recipient of several academic, leadership, and research awards, including McGill Engineering Doctoral Award, IEEE Larry K. Wilson Regional Student Activities Award in 2013, the Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship in 2014, the Ministry of Science and ICT of Korea's best paper award in 2017, IEEE Communications Letters Exemplary Editor Award in 2018, the 2020 IEEE Communications Society Fred W. Ellersick Prize, and the 2021 IEEE Philadelphia Section Delaware Valley Engineer of the Year Award.

Contact : 정보통신대학 전자공학과 신원재 교수
(wjshin@ajou.ac.kr)

☎ 세미나 문의 : 031 - 219 - 3647, 3898



아주대학교

