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**Multi-modal Imaging: Photoacoustic, Ultrasound, Plus More
HW/SW System, Clinical Translation, and Commercial Efforts**

Abstract:

Trans-energy imaging modalities have been significantly explored to overcome existing problems in conventional imaging modalities with respect to spatial/temporal resolutions, penetration depth, signal-to-noise ratio, contrast, and so on. Among them, photoacoustic imaging, an emerging hybrid modality that can provide strong endogenous and exogenous optical absorption contrasts with high ultrasonic spatial resolution, has overcome the fundamental depth limitation while keeping the spatial resolution. The image resolution, as well as the maximum imaging depth, is scalable with ultrasonic frequency within the reach of diffuse photons. In this presentation, the following topics will be discussed; (1) multiscale and multiparametric trans-energy imaging systems, (2) novel deep-learning powered image processing, (3) recent clinical study results in pathology, endocrinology, oncology, cardiology, dermatology, and radiology, (4) label-free ultrafast ultrasound Doppler imaging, and (5) efforts to commercialization.

Brief Biosketch

Dr. Chulhong Kim studied for his Ph.D. degree under Prof. Lihong Wang at Washington University in St. Louis. He currently holds Namgo Chair Professorship, Young Distinguished Professorship, and Mueunjae Chair Professorship of School of Convergence Science and Technology (Head), Convergence IT Engineering (Department Chair), Electrical Engineering, Mechanical Engineering, and Medical Science and Engineering (Program Chair) at Pohang University of Science and Technology in Republic of Korea. He is also the Chief Executive Officer of Opticho Inc., a spinoff company to commercialize preclinical and clinical photoacoustic imaging systems. He was the recipients of the 2022 Korean Presidential Award from Ministry of SMEs and Startups, the Science and Technology Award of the Month for December 2021 by the Korean Minister of Science and ICT, the LINA+50 Creative Innovation Award, the 2020-2021 IEEE EMBS Distinguished Lecturer, the 2017 IEEE EMBS Early Career Achievement Award, the 2017 KAST Young Scientist Award, etc.