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ABOUT IMSE
Introduction
How to find us
Organization
Staff
Visiting IMSE

RESOURCES
Laboratories
IT
CAD tools

RESEARCH
Research Units
Research Groups
Projects
Catalog of ICs
Patents

PUBLICATIONS
IMSE publications
Library

JOB & TRAINING
Education at IMSE
Career at IMSE
Career at Universidad de Sevilla
Career at CSIC

Bridging ICT and Medical Technologies for Smart Disease Diagnosis

Director, Myung Hoon Sunwoo, *IEEE Fellow*

Ultra-small-sized Diagnostic and Smart Devices (uDSD) Research Center.
School of Electrical and Computer Engineering, Ajou University, Suwon Korea

Using deep learning/artificial intelligence (DL/AI) and big data, interdisciplinary technologies of ICT and medical care are emerging and rapidly changing the paradigm of medical care and disease diagnosis and these trends are becoming more and more popular in medical care services. This talk introduces the Ultra-small-sized Diagnostic Smart Devices (uDSD) research center that consists of several universities, hospitals and companies. It investigates emerging interdisciplinary technical areas covering chip design, mobile platform-based intelligent diagnosis, deep learning/artificial intelligence (DL/AI), big data, medical imaging, etc. Currently, the center conducts joint research and development with hospitals and companies to diagnose jaundice test using smart phones, smart capsule endoscope, DL-based mammography, etc. In addition, the uDSD center can promote and contribute mobile platform-based telemedicine that will become widespread in the near future.

MYUNG HOON SUNWOO received the M.S. degree in Electrical and Electronics Engineering from Korea Advanced Institute of Science and Technology (KAIST), and the Ph.D. degree from the University of Texas at Austin in Electrical and Computer Engineering. He worked for the Electronics and Telecommunications Research Institute (ETRI) in Korea and for the Digital Signal Processor Operations, Motorola, in Austin, Texas, U.S.A. Since 1992, he has been with the School of Electrical and Computer Engineering, Ajou University in Suwon, Korea, where he is currently a full Professor.

He served on the General Chair of International Symposium on Circuits and Systems (ISCAS) 2012, Seoul, the successful event held in Korea and will serve again on the General Chair of ISCAS 2021, Daegu Korea. He initiated a new IEEE Circuits and Systems Society (CASS) chapter in Daegu, Korea, which succeeded in ISCAS 2021 bidding. He has been involved in various technical activities over three decades including a member of IEEE CASS BoG (Board of Governors) (2011-2016), a CASS Distinguished Lecturer (2009 – 2010) and a Technical Committee member for numerous conferences. As an IEEE CASS VP-conferences, he initiated the first International Conference on Artificial Intelligence Circuits and Systems (AICAS), successfully held in Hsinchu, March 2019.

He has authored over 430 papers and also holds 90 patents and has received 45 awards including the IEEE CASS Chapter of the Year Award-World, 2013 and the Best Paper Awards from various conferences. Currently, he is the Director of the micro Diagnostic Smart Devices (uDSD) Information and Telecommunication Research Center (ITRC) sponsored by Korean Government. The uDSD center consists of several universities, hospitals and companies to cover emerging interdisciplinary technical areas, such as chip design, deep learning (DL), AI, big data, medical imaging, etc. His research interests cover low power algorithms and architectures, medical devices, DL/AI, and application-specific SoC design.

He was a President of the IEIE (Institute of Electronics and Information Engineers) Semiconductor Society in Korea (2012-2013). He was an honorary ambassador of Korean Tourism Organization. He was a chair of IEEE CASS, Seoul Chapter (2004-2018). He is currently an IEEE CASS VP-Conferences and an IEEE Fellow.

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