



The 8th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2024)

December 18-21, 2024,
Eastin Grand Hotel Sathorn, Bangkok, Thailand
<http://www.ict4sh.org>

Conference Program

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Soonchunhyang University



Conferences

1st International Conference on ICT for Smart Health (ICT4sHealth 2017)

December 28-30, 2017, Sokha Phnom Penh Hotel, Phnom Penh, Cambodia

2nd International Conference on ICT for Smart Health (ICT4sHealth 2018)

December 16-19, 2018, Sokha Phnom Penh Hotel, Phnom Penh, Cambodia

3rd International Conference on ICT for Smart Health (ICT4sHealth 2019)

December 18-20, 2019, Hanoi Pearl Hotel, Hanoi, Vietnam

4th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2020)

December 20-23, 2020, Ramada Jeju City Hotel, Jeju, South Korea

5th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2021)

December 21-23, 2021, High1 Hotel & Resort, Jeongseon, South Korea

6th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2022)

December 18-22, 2022, Kota Kinabalu Marriott Hotel, Kota Kinabalu, Malaysia

7th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2023)

December 18-22, 2023, Grand Tourane Hotel, Da Nang, Vietnam

<http://www.ict4sh.org>

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A Message from Conference Chair

Welcome to the 8th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2024) that will be held from December 18-21, 2024 in Bangkok, Thailand. ICT4sHealth&Home is an annual conference organized by SCH providing an open forum for researchers, engineers, policy makers, and service providers in ICT for Smart Health & Home(sHealth&Home).

In this inaugural year, we are glad to invite the prospective authors to submit papers / poster papers in the following areas: Cloud computing applications for sHealth / Internet of Things (IoT) applications for sHealth / Security for sHealth / Networking and Monitoring in Bio-systems/ Management and Organization of BME Environments / Bioinformatics and Computational Biology and Medicine / Monitoring of Vital Functions with Sensor and ICT Systems / Biosensors and Sensor Networks / Advanced Bio-signal Processing / Distributed BME Applications / Telehealth, Telecare, Telemonitoring, Telediagnosics / e-Healthcare, m-Healthcare, x-Health / Assisted Living / Smartphones in BME Applications / Social Networking, Computing and Education for Health / Computer Aided Diagnostics / Improved Therapeutic and Rehabilitation Methods / Intelligent Bio-signal Interpretation / Smart Home System and Service / Silver care, Living care, Baby care, Pet care / Personalized Medical Devices and Approaches / Wireless Technologies and Network Services.

As time goes on, we expect that the annual ICT4sHealth&Home conference becomes more qualified conference in which many honorable researchers participate to share their valuable research results. ICT4sHealth&Home 2024 offers 7 sessions that present the latest results in various research fields of ICT (information Communication Technology).

I must thank all the authors and speakers for the research papers on their precious achievements. Bangkok, Thailand, is one of the most rapidly prospering cities in South Asia. I hope all participants of ICT4sHealth&Home take this opportunity to explore and encounter wonderful culture and dynamic atmosphere while staying in Bangkok, Thailand.



Prof. Jinseok Lee

**Kyung Hee University
Republic of Korea
Conference Chair of ICT4sHealth&Home 2024**

A Message from Program Chairs

It is a pleasure to welcome you 8th International Conference on ICT for Smart Health & Home (ICT4sHealth&Home 2024). The ICT4sHealth&Home is the premier conference in the Asia Pacific region. ICT4sHealth&Home has grown to be the major international conference in Information Science and Technology area. ICT4sHealth continues the endeavor of high-quality, broad international participation in all areas of ICT for Smart Health&Home(sHealth&Home).

The ICT4sHealth&Home 2024 will be held at Bangkok, Thailand on December 18-21, 2024. It aims to provide a high quality forum for researchers and practitioners to share research findings, practices, and ideas on key issues in Internet related technologies, services, and administrations. The ICT4sHealth 2024 Program Committee organizes as a set of 7 tracks, and welcomes presentations of completed research papers as well as research-in-progress papers, panel discussion, and posters covering those issues.

The successful organization of ICT4sHealth&Home has required the talents, dedication and time of many volunteers from Sweden, India, Cambodia, Pakistan, Saudi Arabia, Norway, India, USA, and South Korea. Special gratitude and appreciation go to various session chairs. we would also like to thank the various session chairs as they are primarily responsible for the content of the technical program.

We hope that you will find the conference both enjoyable and valuable, and also enjoy the architectural, cultural and natural beauty of Bangkok, Thailand. Bangkok is one of the most popular tourist destinations in Vietnam and is well situated for welcoming the ICT4sHealth&Home 2024 participants from around the world.



Prof. Yunyoung Nam
Soonchunhyang
University, Korea



Prof. Yoo-Joo Choi
Seoul Media Institute
of Technology, Korea

Prof. Yunyoung Nam and Prof. Yoo-Joo Choi
Program Chairs of ICT4sHealth&Home 2024

Organizing Committee

| Conference Chair |

Jinseok Lee, Kyung Hee University, Republic of Korea

| Program Chairs |

Yunyoung Nam, Soonchunhyang University, Korea

Yoo-Joo Choi, Seoul Media Institute of Technology, Korea

| Steering Chairs |

Seugmin Rho, Chung-Ang University, Republic of Korea

Mucheol Kim, Chung-Ang University, Republic of Korea

Yeon Sik Noh, University of Massachusetts Amherst, USA

Dal Ahn, Soonchunhyang University, Republic of Korea

Byeong-Gwon Kang, Soonchunhyang University, Republic of Korea

Jongsik Lim, Soonchunhyang University, Republic of Korea

Sang-Min Han, Soonchunhyang University, Republic of Korea

Seong-A Lee, Soonchunhyang University, Republic of Korea

| Program Committee |

Yun-Cheol Nam, Joongbu University, Republic of Korea

Eun Young Kim, Soonchunhyang University, Republic of Korea

Young-Seob Jeong, Chungbuk National University, Republic of Korea

Dong Min Kim, Soonchunhyang University, Republic of Korea

Jin-Hyuck Park, Soonchunhyang University, Republic of Korea

Seong-Ho Son, Soonchunhyang University, Republic of Korea

Youna Jang, Soonchunhyang University, Republic of Korea

Chun-Ho Kim, Daejin University, Republic of Korea

Jung-Yeon Kim, Soonchunhyang University, Republic of Korea

Seifedine Kadry, Beirut Arab University, Lebanon

Muhammad Ramzan, Bahria University, Pakistan

Bersain A. Reyes, Universidad Autónoma de San Luis Potosí, Mexico

Tharoeun Thap, Royal University of Phnom Penh, Cambodia

Youngsun Kong, University of Connecticut, USA

Eunhye Jo, Korea National University of Education, Republic of Korea

Conference Program

DEC. 18, 2024	Seminar 1
16:00-18:00	Registration & Greeting /VIP Reception

DEC. 19, 2024	Seminar 2
08:00-	Registration
09:00-10:30	Session A
10:30-11:00	Break Time
11:00-12:30	Session B
12:30-13:30	Lunch
13:30-14:50	Session C
14:50-15:20	Break Time
15:20-16:40	Session D
18:30-21:00	Dinner

Conference Program

DEC. 20, 2024	Seminar 3
09:00-11:00	Special Session for Academic and Industrial Scientists
12:00-13:00	Lunch
13:30-15:00	Session E
15:30-18:00	Session F
18:00-19:00	Committee meeting

Conference Program

DEC. 21, 2024	Seminar 4
10:00-12:00	Session G Panel Discussion for Smart Home
12:00-13:00	Lunch

Conference Program

| 09:00-10:30, December 19, 2024 |

Session A: Wireless Technologies / Network Services / Cells

Chair: Prof. Jongsik Lim
(Soonchunhyang Univ., Korea)

A1	Design of a 3-Arm Branch Line Hybrid Couplers Using Defected Microstrip Structure
	Jeongho Park, Hyungzun Mun, Jongsik Lim, Seong-Ho Son Sang-Min Han, Dal Ahn (Soonchunhyang University, Korea (South))
A2	Indoor Moving Object Localization Using Microwave Imaging Operating Without Background Field Information
	JangHoon Jeong, DongWon Kwon, Sungtae Hwang, Jang-Moon Jo and Seong-Ho Son (Soonchunhyang University, Korea (South))
A3	Performance Evaluation of PSBCH in NR V2X Sidelink
	Daegun Jang and Byeong-Gwon Kang (Soonchunhyang University, Korea (South))
A4	Performance Evaluation of Synchronization Signal Block in NR
	Gayeon Kim and Byeong-Gwon Kang (Soonchunhyang University, Korea (South))
A5	Secure Data Transmission Using Split YOLO Model and AES-ECB Encryption for Intelligent Homecare
	Minhyeok Park (University of Soonchunhyang, Korea (South)); Dong Min Kim (Soonchunhyang University, Korea (South))
A6	Automated Comet Assay Image Analysis, Detection and Quantification of DNA Damage in Individual Cells
	Vishal Boga (North Carolina State University, USA); Manjunath Kanabagatte Nanjundappa (Manipal Academy of Higher Education & Manipal Institute of Technology, India); Deepak Lawrence K. (National Institute of Technology, Calicut, India); Vamshi Kulkarni (Softrams Leesburg USA, USA); Manuel Manuel (Scania AB, Sweden)

Conference Program

| 11:00-12:30, December 19, 2024 |

Session B: IoT / Security

Chair: Prof. Yongwon Cho
(Soonchunhyang Univ., Korea)

B1	Predicting Emergency Department Mortality Using Pre-hospital information
	Naeun Oh and Jinseok Lee (Kyung Hee University, Republic of Korea)
B2	Automatic Atrial Fibrillation Detection using Window-based Averaged Heart Rates from Photoplethysmogram: Feasibility Study
	Dowon Kim and Jinseok Lee (Kyung Hee University, Republic of Korea)
B3	Classifying Lumbar Spine Degenerative Conditions in MRI: A Two-Stage Approach from the 2024 RSNA Competition
	Jinsu Park and Jinseok Lee (Kyung Hee University, Republic of Korea)
B4	Deep Learning Model for Diagnosing Rheumatoid Arthritis of Fingers with Image Processing Techniques using SAM
	Jina Kim and Jinseok Lee (Kyung Hee University, Republic of Korea)
B5	Machine Learning-Assisted Diagnosis of Autism Spectrum Disorder : Gut-Microbiome Composition Analysis
	Jehyeuk Ahn and Jinseok Lee (Kyung Hee University, Republic of Korea)
B6	Algorithms for solving imbalanced binary data problems during model training
	Woochel Jang and Jinseok Lee (Kyung Hee University, Republic of Korea)

Conference Program

| 13:30-14:50, December 19, 2024 |

Session C: Babycare / Livingcare

Chair: Prof. JiYoung Woo
(Soonchunhyang Univ., Korea)

C1

A Multi-Faceted Approach to Knee Arthritis Classification: Integrating Deep Learning, Transfer Learning, and Optimization Techniques

Ahsan Aziz, Kim Chomyong, Yunyoung Nam and Yongwon Cho
(Soonchunhyang University, Korea (South))

C2

Enhanced Diagnosis of Chest X-Ray Using Hybrid Deep Learning Models and Feature Selection Techniques

Ahsan Aziz, Awais Khan, Yongwon Cho and Yunyoung Nam (Soonchunhyang University, Korea (South))

C3

Study on Indoor Presence Detection Using Wi-Fi and Edge Computing

JunYeong Jeon, Dong Min Kim and Issamu Fred Ngwalo (Soonchunhyang University, Korea (South))

C4

Human Fall Direction Recognition in the Indoor and Outdoor Environment Using Multi Self-Attention RNet Deep Architectures

Awais Khan, Jung-Yeon Kim and Yunyoung Nam (Soonchunhyang University, Korea (South))

C5

Parent-Child Interaction (PCI) Quantitative Measurement Model: Focused on Computer Vision-Based Nonverbal Interaction Extraction and Analysis

Hyunsik Min, Byeonghun Kim, Kim Chomyong and Eun Young Kim
(Soonchunhyang University, Korea (South))

Conference Program

| 15:20-16:40, December 19, 2024 |

Session D: Medical Image Processing / Healthcare

Chair: Prof. Seong-Ho Son
(Soonchunhyang Univ., Korea)

D1

Gender Classification Through Audio Features Using Deep Learning Based Multi Models

Syed Ali Naqi Raza (SoonChunHyang University, Korea (South)); Kim Chomyong, Jung-Yeon Kim and Yunyoung Nam (Soonchunhyang University, Korea (South))

D2

Emotion Recognition in Children's Speech: Using Acoustic and Spectral Features

Gati Lothar Martin and JiYoung Woo (Soonchunhyang University, Korea (South))

D3

Using Eye Movement Detection to Assess Students' Learning Concentration in a Virtual Learning Environment

Shilong Liu, Kim Chomyong and Yunyoung Nam (Soonchunhyang University, Korea (South))

D4

VR-Based Hand Tracking for Enhancing Spatial Cognition

Ma Shaoqi, Kim Chomyong and Yunyoung Nam (Soonchunhyang University, Korea (South))

Conference Program

| 09:00-11:00, December 20, 2024 |

Special Session for Academic and Industrial Scientists

Chair: Prof. Yunyoung Nam
(Soonchunhyang Univ., Korea)

| 13:30-15:00, December 20, 2024 |

Session E: Homecare / Silvercare

Chair: Prof. Seong-A Lee
(Soonchunhyang Univ., Korea)

E1	Consideration on AAL Supporting ICT Smart Home for Dementia Patients (Ambient Assisted Living)
	Dayeong So (Soonchunhyang University, Korea (South)); Lee Wan gyun (Soonchunhyang Graduate School, Korea (South)); Ji Yea Kim, Jin-Hyuck Park and Seong-A Lee (Soonchunhyang University, Korea (South))
E2	Responsible Artificial Intelligence for Climate Action: A Theoretical Framework for Sustainable Development
	Byeong-Gwon Kang, Yunyoung Nam and Eun Young Kim (Soonchunhyang University, Korea (South))
E3	A Gamified Cognitive Behavioral Therapy to Reduce Symptoms of Depression, Anxiety, and Stress
	Nourhan A Amer, Samaa M Shohieb (Mansoura University, Egypt), Waleed Eladrosy (Mansoura University, Egypt), Shilong Liu, Yunyoung Nam, Seong-Ho Son (Soonchunhyang University, Korea (South)), Samir Abdelrazek (Mansoura University, Egypt)
E4	A Comparative Study for Real and Virtual Environments to Measure Trust in Robots Using Brain-Computer Interface
	Fatima Ahmad, Sara Ali, Fahad Iqbal Khawaja, Muhammad Nabeel Anwar, Yasar Ayaz (National University of Science and Technology, Pakistan), Shrooq Alsenan (Princess Nourah bint Abdulrahman University, Saudi Arabia), Muhammad Attique Khan (HITEC University, Pakistan), Sokea Teng, Yunyoung Nam (Soonchunhyang University, Republic of Korea)

Conference Program

| 15:30-18:00, December 20, 2024 |

Session F: AI / Big Data / Robot

Chair: Prof. Seungmin Rho
(Chung-Ang Univ., Korea)

F1	Quantum Intelligence in Beyond 5G Networks: Current Progress, and Open Avenues
	Byeong-Gwon Kang, Yunyoung Nam and Seong-Ho Son (Soonchunhyang University, Korea (South))
F2	A Comprehensive Review of Synthetic Data Generation Techniques for Privacy-Preserving Use of Sensitive Information
	Seungmin Rho (Chung-Ang University, Korea (South))
F3	Evaluating Dataset Adaptability in Sign Language Translation Models Using the ACE Framework and BERTScore Evaluation
	Mucheol Kim (Chung-Ang University, Korea (South))
F4	Sarcopenia Diagnosis System and Its Application: Analysis by Liver Diseases
	Si Hyeong Noh, DongWook Lim and Goeun Lee (Wonkwang University, Korea (South)); Chang Won Jeong (Wonkwang University, Korea (South) & Sarcopenia Total Solution Center, Korea (South))

| 18:00-19:00, December 20, 2024 |

Committee meeting

Chair: Prof. Yunyoung Nam
(Soonchunhyang Univ., Korea)

Conference Program

| 10:00-12:00, December 21, 2024 |

Session G

Panel Discussion for Smart Home

Chair: Prof. Chang Won Jeong
(Wonkwang University, Korea (South))

Memo

Venue



Contact:

Address: 33/1 S Sathon Rd, Yannawa Khet Sathon, Bangkok 10120, Thailand

Phone: +6622108100

