CHULHONG **MIN**

Principal Research Scientist and Tech Lead · Device Systems Team · Pervasive Systems · Nokia Bell Labs, Cambridge, UK

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Research Profile

I am currently working as a Principal Research Scientist at Nokia Bell Labs in Cambridge, UK and lead the Device Systems team. I specialize in the development of multi-device systems tailored to enable collaborative, interactive services while preserving user privacy. In this era, marked by the proliferation of on/near-body devices, our device interactions are increasingly mediated by a variety of sensory technologies. My work seeks to address system and algorithmic challenges, paving the way for multi-device, multi-modal, and multi-sensory integrations, thereby offering exciting opportunities for accurate, robust and seamless edge intelligence.

My research interests include mobile and embedded systems, edge intelligence, tiny ML, the Internet of Things (IoT), and social and cultural computing. I am deeply passionate about translating research into tangible, working systems and applications. Moreover, I value interdisciplinary collaboration, always seeking opportunities to work with experts across various domains.

Employment

Device Systems Team, Pervasive Systems Group, Nokia Bell Labs — *Cambridge, UK*

Principal Research Scientist and Tech Lead — *Jul. 2022 - PRESENT*

Pervasive Systems Group, Nokia Bell Labs — *Cambridge, UK*

Research Scientist — *Feb. 2019 - Jun. 2022*

Department of Computer Science and Technology, University of Cambridge — *Cambridge, UK*

Visitor — *Mar. 2019 - Feb. 2021*

Pervasive Systems Group, Nokia Bell Labs — *Cambridge, UK*

Member of Technical Staff — *Mar. 2017 - Jan. 2019*

School of Computing, KAIST — *Daejeon, South Korea*

Postdoctoral Researcher — *Mar. 2016 - Dec. 2016*

Education

KAIST (Korea Advanced Institute of Science and Technology) — *Daejeon, South Korea*

Ph.D. in Computer Science — *Feb. 2016*

- Advisor: Junehwa Song
- Dissertation: ”User Support for Battery Management of Continuous Sensing Applications”
- ***Outstanding Ph.D Thesis Award*** in School of Computing at KAIST

KAIST (Korea Advanced Institute of Science and Technology) — *Daejeon, South Korea*

M.S. in Computer Science — *Aug. 2009*

- Advisor: Junehwa Song
- Thesis: ”bOM: System Orchestration Framework in Sensor-rich Mobile Environment”

KAIST (Korea Advanced Institute of Science and Technology) — *Daejeon, South Korea*

B.S. in Computer Science — *Aug. 2007*

Publication

Peer-reviewed Publications (Conferences and Journals)

[C.21] GrooveMeter: Enabling Music Engagement-aware Apps by Detecting Reactions to Daily Music Listening via Earable Sensing — *Paper*

Euihyeok Lee, **Chulhong Min**, Jaeseung Lee, Jin Yu, Seungwoo Kang

To appear in ACM International Conference on Multimedia, Ottawa, Canada, Oct. 2023 — *ACM MM 2023*

[J.14] SensiX++: Bringing MLOps and Multi-tenant Model Serving to Sensory Edge Devices — *Paper*

Chulhong Min, Akhil Mathur, Utku Günay Acer, Alessandro Montanari, Fahim Kawsar

ACM Transactions on Embedded Computing Systems, Accepted — *ACM TECS*

[J.13] A Multi-device and Multi-modal Dataset for Human Energy Expenditure Estimation using Wearable Devices — *Paper*

Shkurta Gashi, **Chulhong Min**, Alessandro Montanari, Silvia Santini, Fahim Kawsar

Nature Scientific Data 9, Article number: 537 (2022) — *Nature Data 2022*

[J.12] SensiX: A System for Best-effort Inference of Machine Learning Models in Multi-device Environments — *Paper*

Chulhong Min, Akhil Mathur, Alessandro Montanari, Fahim Kawsar,

IEEE Transactions on Mobile Computing, Early Access — *IEEE TMC*

[J.11] The City as a Personal Assistant: Turning Urban Landmarks into Conversational Agents for Serving Hyper Local Information — *Paper*

Utku Gunay Acer, Marc Van Den Broeck, **Chulhong Min**, Mallesham Dasari, Fahim Kawsar

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, Volume 6, Issue 2, July 2022, Article No.: 40, pp 1–31 — *ACM IMWUT*

[J.10] ColloSSL: Collaborative Self-Supervised Learning for Human Activity Recognition — *Paper*

Yash Jain, Chi Ian Tang, **Chulhong Min**, Fahim Kawsar, Akhil Mathur

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, Volume 6, Issue 1, March 2022, Article No.: 17, pp 1–28 — *ACM IMWUT*

[C.20] SleepGAN: Towards Personalized Sleep Therapy Music — *Paper*

Jing Yang, **Chulhong Min**, Akhil Mathur, Fahim Kawsar

IEEE International Conference on Acoustics, Speech and Signal Processing, Singapore, Singapore, May 2022. — *ICASSP 2022*

[J.09] In-Ear PPG for Vital Signs — *Paper*

Andrea Ferlini, Alessandro Montanari, **Chulhong Min**, Hongwei Li, Ugo Sassi, Fahim Kawsar

IEEE Pervasive Computing (Volume: 21, Issue: 1, 01 Jan.-Mar. 2022) — *IEEE Pervasive Computing*

[C.19] FatigueSet: A Multi-modal Dataset for Modeling Mental Fatigue and Fatigability — *Paper*

Manasa Kalanadhabhatta, **Chulhong Min**, Alessandro Montanari, Fahim Kawsar

EAI International Conference on Pervasive Computing Technologies for Healthcare, Tel Aviv, Israel, Dec. 2021. — *PervasiveHealth 2021*

[C.18] Deploying Collaborative Machine Learning Systems in Edge with Multiple Cameras — *Paper*

Si Young Jang, Utku Gunay Acer, **Chulhong Min**, Fahim Kawsar

International Conference on Mobile Computing and Ubiquitous Networking, Tokyo, Japan, Nov. 2021. — *ICMU 2021*

[C.17] Augmenting Conversational Agents with Ambient Acoustic Contexts *Paper*

Chungjong Park, **Chulhong Min**, Sourav Bhattacharya, Fahim Kawsar

International Conference on Human-Computer Interaction with Mobile Devices and Services, Cyberspace, Oct. 2020. *MobileHCI 2020*

[J. 08] Scalable Power Impact Prediction of Mobile Sensing Applications at Pre-installation Time *Paper*

Chulhong Min, Youngki Lee, Chungkuk Yoo, Inseok Hwang, Younghyun Ju, Junehwa Song, Seungwoo Kang

IEEE Transactions on Mobile Computing, Volume 19, Issue 6, pp. 1448-1464, Jun. 2020 *IEEE TMC 2020*

- This paper is an extended version of the PowerForecaster paper published in SenSys 2015.

[C.16] A Closer Look at Quality-Aware Runtime Assessment of Sensing Models in Multi-Device Environments *Paper*

Chulhong Min, Alessandro Montanari, Akhil Mathur, Fahim Kawsar

ACM Conference on Embedded Networked Sensor Systems, New York, USA, Nov. 2019. *ACM SenSys 2019*

[J.07] Towards Interpersonal Assistants: Next-generation Conversational Agents *Paper*

Inseok Hwang, Youngki Lee, Chungkuk Yoo, **Chulhong Min**, Dongsun Yim, John Kim

IEEE Pervasive Computing (Volume 18, Issue 2, p. 21-31, Aug. 2019 *IEEE Pervasive Computing*

[C.15] Tiger: Wearable Glasses for the 20-20-20 Rule to Alleviate Computer Vision Syndrome *Paper*

Chulhong Min, Euihyeok Lee, Souneil Park, Seungwoo Kang

International Conference on Human-Computer Interaction with Mobile Devices and Services, Taipei, Taiwan, Oct. 2019 *ACM MobileHCI 2019*

- **Honorable Mention Award**

[C.14] An Early Characterisation of Wearing Variability on Motion Signals for Wearables *Paper*

Chulhong Min, Akhil Mathur, Alessandro Montanari, Fahim Kawsar

International Symposium on Wearable Computers, London, UK, Sep. 2019. *ISWC 2019*

[C.13] Automatic Smile and Frown Recognition with Kinetic Earables *Paper*

Seungchul Lee, **Chulhong Min**, Alessandro Montanari, Akhil Mathur, Youngjae Chang, Junehwa Song, Fahim Kawsar

Augmented Human International Conference, Reims Champagne-Ardenne, France, Mar. 2019 *AH 2019*

[J.06] On Tracking the Physicality of Wi-Fi: A Subspace Approach *Paper*

Mohammed Alloulah, Anton Isopoussu, **Chulhong Min**, Fahim Kawsar

IEEE Access (Volume: 7, p. 19965-19978, Feb. 2019 *IEEE Access*

[C.12] An Early Resource Characterisation of Wi-Fi Sensing on Residential Gateways *Paper*

Chulhong Min, Mohammed Alloulah, Fahim Kawsar

ACM International Conference on Systems for Energy-Efficient Built Environments, Shenzhen, China, Nov. 2018 *ACM BuildSys 2018*

[J.05] Earables for Personal-Scale Behavior Analytics *Paper*

Fahim Kawsar, **Chulhong Min**, Akhil Mathur, Alessandro Montanari

IEEE Pervasive Computing (Volume: 17, Issue: 3, Jul.-Sep. 2018 *IEEE Pervasive Computing*

[C.11] Zaturi: We Put Together the 25th Hour for You. Create a Book for Your Baby *Paper, Video*

Bumsoo Kang, **Chulhong Min**, Wonjung Kim, Inseok Hwang, Chunjong Park, Seungchul Lee, Sung-Ju Lee, Junehwa Song

ACM Conference on Computer-Supported Cooperative Work and Social Computing, Portland, Oregon, USA, Feb. 2017 *ACM CSCW 2017*

[C.10] PADA: Power-aware Development Assistant for Mobile Sensing Applications *Paper, Slide, Video*

Chulhong Min, Seungchul Lee, Changhun Lee, Youngki Lee, Seungwoo Kang, Seungpyo Choi, Wonjung Kim, Junehwa Song

ACM International Joint Conference on Pervasive and Ubiquitous Computing, Heidelberg, Germany, Sep. 2016 *ACM UbiComp 2016*

[J. 04] CoMon+: A Cooperative Context Monitoring System for Multi-Device Personal Sensing Environments *Paper*

Youngki Lee, Seungwoo Kang, **Chulhong Min**, Younghyun Ju, Inseok Hwang, Junehwa Song

IEEE Transactions on Mobile Computing, Volume 15, Issue 8, pp. 1908-1924, Aug. 2016 *IEEE TMC 2016*

- This paper is an extended version of the CoMon paper published in MobiSys 2012.

[J. 03] PowerForecaster: Predicting Power Impact of Mobile Sensing Applications at Pre-installation Time *Paper*

Chulhong Min, Youngki Lee, Chungkuk Yoo, Seungwoo Kang, Inseok Hwang, Junehwa Song

GetMobile: Mobile Comp. and Comm. Volume 20, Issue 1 (July 2016), pp. 30-33 *GetMobile 2016*

- This is an overview article of the PowerForecaster paper published in SenSys 2015.

[C.09] PowerForecaster: Predicting Smartphone Power Impact of Continuous Sensing Applications at Pre-installation Time *Paper, Slide, Talk*

Chulhong Min, Youngki Lee, Chungkuk Yoo, Seungwoo Kang, Sangwon Choi, Pillsoon Park, Inseok Hwang, Younghyun Ju, Seungpyo Choi, Junehwa Song

ACM Conference on Embedded Networked Sensor Systems, Seoul, Korea, Nov. 2015 *ACM SenSys 2015*

[C.08] Sandra Helps You Learn: the More You Walk, the More Battery Your Phone Drains *Paper, Slide*

Chulhong Min, Chungkuk Yoo, Inseok Hwang, Seungwoo Kang, Youngki Lee, Seungchul Lee, Pillsoon Park, Changhun Lee, Seungpyo Choi, Junehwa Song

ACM International Joint Conference on Pervasive and Ubiquitous Computing, Osaka, Japan, Sep. 2015 *ACM UbiComp 2015*

[C.07] Exploring Current Practices for Battery Use and Management of Smartwatches *Paper, Slide, Dataset*

Chulhong Min, Seungwoo Kang, Chungkuk Yoo, Jeehoon Cha, Sangwon Choi, Younghan Oh, Junehwa Song

International Symposium on Wearable Computers, Osaka, Japan, Sep. 201 *ISWC 2015*

[J. 02] An Active Resource Orchestration Framework for PAN-Scale, Sensor-Rich Environments *Paper*

Youngki Lee, **Chulhong Min**, Younghyun Ju, Seungwoo Kang, Yunseok Rhee, Junehwa Song

IEEE Transactions on Mobile Computing, Vol. 13, Issue 3, Mar. 2014 *IEEE TMC 2014*

- This paper is an extended version of the Orchestrator paper published in PerCom 2010.

[C. 06] TalkBetter: family-driven mobile intervention care for children with language delay *Paper*

Inseok Hwang, Chungkuk Yoo, Chanyou Hwang, Dongsun Yim, Youngki Lee, **Chulhong Min**, John Kim, Junehwa Song

ACM Conference on Computer-Supported Cooperative Work and Social Computing, Baltimore, USA, Feb. 2014 *ACM CSCW 2014*

- **Best Paper Award**
- **Media Coverage**: NewScientist, Feb. 1 2014. Click **here** to see the article.

[C.05] SocioPhone: Everyday Face-to-Face Interaction Monitoring Platform using Multi-phone Sensor Fusion *Paper*

Youngki Lee, **Chulhong Min**, Chanyou Hwang, Jaeung Lee, Inseok Hwang, Younghyun Ju, Chungkuk Yoo, Miri Moon, Uichin Lee, Junehwa Song

ACM International Conference on Mobile Systems, Applications, and Services, Taipei, Taiwan, Jun. 2013 *ACM MobiSys 2013*

[C.04] SymPhoney: A Coordinated Sensing Flow Execution Engine for Concurrent Mobile Sensing Applications *Paper*

Younghyun Ju, Youngki Lee, Jihyun Yu, **Chulhong Min**, Insik Shin, Junehwa Song

ACM Conference on Embedded Network Sensor Systems, Toronto, Canada, Nov. 2012 *ACM SenSys 2012*

[C.03] CoMon: Cooperative Ambience Monitoring Platform with Continuity and Benefit Awareness *Paper*

Youngki Lee, Younghyun Ju, **Chulhong Min**, Seungwoo Kang, Inseok Hwang, Junehwa Song

ACM Annual International Conference on Mobile Systems, Applications, and Services, Low Wood Bay, Lake District, United Kingdom, Jun. 2012 *ACM MobiSys 2012*

[J.01] MobiCon: Mobile Context Monitoring Platform for Sensor-Rich Dynamic Environments *Paper*

Youngki Lee, Sitharam S. Iyengar, **Chulhong Min**, Younghyun Ju, Seungwoo Kang, Taiwoo Park, Jinwon Lee, Yunseok Rhee, Junehwa Song

Communications of the ACM, Vol. 55, Issue 3, Mar. 2012 *CACM 2012*

[C.02] An Efficient Dataflow Execution Method for Mobile Context Monitoring Applications *Paper*

Younghyun Ju, **Chulhong Min**, Youngki Lee, Jihyun Yu, Junehwa Song

IEEE International Conference on Pervasive Computing and Communications, Lugano, Switzerland, Mar. 2012 *IEEE PerCom 2012*

[C.01] Orchestrator: An Active Resource Orchestration Framework for Mobile Context Monitoring in Sensor-rich Mobile Environments *Paper*

Seungwoo Kang, Youngki Lee, **Chulhong Min**, Younghyun Ju, Taiwoo Park, Jinwon Lee, Yunseok Rhee, Junehwa Song

IEEE International Conference on Pervasive Computing and Communications, Menheim, Germany, Mar. 2010 *IEEE PerCom 2010*

Theses

[T.02] User Support for Battery Management of Continuous Sensing Applications

Chulhong Min

Ph.D. Thesis, School of Computing, KAIST, Korea, Feb. 2016

- **Outstanding Ph.D. Thesis Award** in School of Computing at KAIST

[T.01] bOM: System Orchestration Framework in Sensor-rich Mobile Environment

Chulhong Min

M.S. Thesis, School of Computing, KAIST, Korea, Aug. 2009

Peer-Reviewed Workshops

[W.13] Cocoon: On-body Microphone Collaboration for Spatial Awareness *Paper*

Bhawana Chhaglani, Utku Günay Acer, Si Young Jang, Fahim Kawsar, **Chulhong Min**

International Workshop on Mobile Computing Systems and Applications, Orange County, California, USA, Feb. 2023 *ACM HotMobile 2023*

[W.12] Ultra-low Power DNN Accelerators for IoT: Resource Characterisation of the MAX78000 *Paper*

Arthur Moss, Hyunjong Lee, Lei Xun, **Chulhong Min**, Fahim Kawsar, Alessandro Montanari

International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things, Boston, USA, Nov. 2022 *ACM AIChallengeIoT 2022*

- **Best Paper Award**

[W.11] Vision Paper: Towards Software-Defined Video Analytics with Cross-Camera Collaboration *Paper*

Juheon Yi, **Chulhong Min**, Fahim Kawsar

International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things, Coimbra, Portugal, Nov. 2021 *ACM AIChallengeIoT 2021*

[W.10] Towards Automatic Recognition of Perceived Level of Understanding on Online Lectures using Earables *Paper*

Dongwoo Kim, **Chulhong Min**, Seungwoo Kang

ACM Workshop on Earable Computing, Virtual, Sep. 2021 *ACM EarComp 2021*

[W.09] Designing Memory Aids for Dementia Patients using Earables *Paper*

Matija Franklin, David Lagnado, **Chulhong Min**, Akhil Mathur, Fahim Kawsar

ACM Workshop on Earable Computing, Virtual, Sep. 2021 *ACM EarComp 2021*

[W.08] Group Supervised Learning: Extending Self-Supervised Learning to Multi-Device Settings *Poster*

Yash Jain, Chi Ian Tang, **Chulhong Min**, Fahim Kawsar, Akhil Mathur

ICML 2021 Workshop Self-Supervised Learning for Reasoning and Perception in conjunction with ICML 2021, Virtual, Jul. 2021 *Self-Supervised Learning for Reasoning and Perception 2021*

[W.07] Resource Characterisation of Personal-Scale Sensing Models on Edge Accelerators *Paper*

Mattia Antonini, Tran Huy Vu, **Chulhong Min**, Alessandro Montanari, Akhil Mathur, Fahim Kawsar

International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things, New York, USA, Nov. 2019 *ACM AIChallengeIoT 2019*

[W.06] Mom, I see You Angry at Me! Designing a Mobile Service for Parent-child Conflicts by In-situ Emotional Emphaty *Paper*

Chungkuk Yoo, Seungwoo Kang, Inseok Hwang, **Chulhong Min**, Seonghoon Kim, Wonjung Kim, Junehwa Song

ACM Workshop on Mobile Systems for Computational Social Science, Seoul, South Korea, Jun. 2019 *ACM MCSS 2019*

[W.05] Cross-Modal Approach for conversational Well-being Monitoring with Multi-Sensory Earables *Paper*

Chulhong Min, Alessandro Montanari, Akhil Mathur, Fahim Kawsar

ACM Workshop on Computing for Well-being, Singapore, Singapore, Oct. 2018 *ACM WellComp 2018*

[W.04] Exploring Audio and Kinetic Sensing on Earable Devices *Paper*

Chulhong Min, Akhil Mathur, Fahim Kawsar

ACM Workshop on Wearable Systems and Applications, Munich, Germany, Jun. 2018 *ACM WearSys 2018*

[W.03] Embarrassing Interactions *Paper, Slide*

Sebastian Deterding, Andrés Lucero, Jussi Holopainen, **Chulhong Min**, Adrian Cheok, Annika Waern, Steffen Walz

ACM Conference Extended Abstracts on Human Factors in Computing Systems, Seoul, Korea, Apr. 2015 *ACM CHI EA 2015*

[W.02] Uncovering Embarrassing Moments in In-situ Exposure of Incoming Mobile Messages *Paper*

Chulhong Min, Saumay Pushp, Seungchul Lee, Inseok Hwang, Youngki Lee, Seungwoo Kang, Junehwa Song

ACM Workshop on Mobile Systems for Computational Social Science, Seattle, USA, Sep. 2014 *ACM MCSS 2014 (UbiComp Adjunct)*

[W.01] Uncovering Embarrassing Moments in In-situ Exposure of Incoming Mobile Messages *Paper*

SangJeong Lee, **Chulhong Min**, Chungkuk Yoo, Junehwa Song

ACM Workshop on Mobile Systems for Computational Social Science, Zurich, Switzerland, Sep. 2013 *ACM MCSS 2013 (UbiComp Adjunct)*

Other Publications (Invited Papers, Demos, Posters, Videos, and Ph.D Forum)

[P.07] Towards Recognizing Perceived Level of Understanding for Online Lectures using Earables *Poster*

Dongwoo Kim, **Chulhong Min**, Seungwoo Kang

ACM Conference on Embedded Networked Sensor Systems, Yokohama, Japan, Nov. 2020 *ACM SenSys 2020*

[P.06] Automatic Recognition of Vocal Reactions in Music Listening using Smart Earbuds *Poster*

Euihyeok Lee, Dongwoo Kim, **Chulhong Min**, Seungwoo Kang

ACM Conference on Embedded Networked Sensor Systems, Yokohama, Japan, Nov. 2020 *ACM SenSys 2020*

[D.10] eSense - Open Earable Platform for Human Sensing *Demo*

Fahim Kawsar, **Chulhong Min**, Akhil Mathur, Alessandro Montanari, Marc Van den Broeck, Utku Gunay Acer

ACM Conference on Embedded Networked Sensor Systems, Shenzhen, China, Nov. 2018 *ACM SenSys 2018*

[P.05] Exploring Situation-aware Dynamic Message Screening for Mobile Messengers *Poster*

Seungchul Lee, Saumay Pushp, **Chulhong Min**, Junehwa Song

ACM International Joint Conference on Pervasive and Ubiquitous Computing, Singapore, Singapore, Oct. 2018 *ACM UbiComp 2018*

[P.04] Towards a Wearable Assistant to Prevent Computer Vision Syndrome *Poster*

Euiheok Lee, **Chulhong Min**, Seungwoo Kang

ACM International Joint Conference on Pervasive and Ubiquitous Computing, Singapore, Singapore, Oct. 2018 *ACM UbiComp 2018*

[D.09] eSense - Open Earable Platform for Human Sensing *Demo*

Fahim Kawsar, **Chulhong Min**, Akhil Mathur, Alessandro Montanari, Marc Van den Broeck, Utku Gunay Acer

ACM International Joint Conference on Pervasive and Ubiquitous Computing, Singapore, Singapore, Oct. 2018 *ACM UbiComp 2018*

[P.03] Audio-kinetic Model for Automatic Dietary Monitoring with Earable Devices *Poster*

Chulhong Min, Akhil Mathur, Fahim Kawsar

ACM International Conference on Mobile Systems, Applications, and Services, Munich, Germany, Jun. 2018 *ACM MobiSys 2018*

[D.08] eSense: Earable Platform for Human Sensing *Demo*

Fahim Kawsar, **Chulhong Min**, Akhil Mathur, Marc Van den Broeck, Utku Gunay Acer, Claudio Forlivesi

ACM International Conference on Mobile Systems, Applications, and Services, Munich, Germany, Jun. 2018 *ACM MobiSys 2018*

[D.07] Zaturi: Blending Hours Spent at Work and Hours Devoted to Children *Demo*

Bumsoo Kang, Wonjung Kim, Inseok Hwang, Chunjong Park, Seungchul Lee, **Chulhong Min**, Sung-Ju Lee, Junehwa Song

ACM Conference on Computer-Supported Cooperative Work and Social Computing, Portland, Oregon, USA, Feb. 2017 *ACM CSCW 2017*

[D.06] User Support for Power Management of Continuous Sensing Applications *Demo*

Chulhong Min, Chungkuk Yoo, Sangwon Choi, Pillsoon Park, Seungchul Lee, Seungpyo Choi, Seungwoo Kang, Youngki Lee, Inseok Hwang, Younghyun Ju, Junehwa Song

ACM Conference on Embedded Networked Sensor Systems, Seoul, Korea, Nov. 2015 *ACM SenSys 2015*

[V.01] TalkBetter: Smartphone-supported Intervention in Family Conversation for Children with Language Delay *Video*

Inseok Hwang, Chungkuk Yoo, Chanyou Hwang, Dongsun Yim, Youngki Lee, **Chulhong Min**, John Kim, Junehwa Song

ACM conference on Computer supported cooperative work and social computing, Baltimore, USA, Feb. 2014 *ACM CSCW 2014*

[D.05] SocioPhone: Everyday Face-to-Face Interaction Monitoring Platform using Multi-phone Sensor Fusion *Demo*

Youngki Lee, **Chulhong Min**, Chanyou Hwang, Jaeung Lee, Inseok Hwang, Younghyun Ju, Chungkuk Yoo, Miri Moon, Uichin Lee, Junehwa Song

ACM Annual International Conference on Mobile Systems, Applications, and Services, Taipei, Taiwan, Jun. 2013 *ACM MobiSys 2013*

[D.04] ACM HotMobile 2013 Demo Brining In-situ Social Awareness to Mobile Systems: Conversational Turn Monitoring and its Applications *Demo*

Chulhong Min, Inseok Hwang, Jaeung Lee, Chanyou Hwang, Chungkuk Yoo, Miri Moon, Taiwoo Park, Changhoon Lee, Haechan Lee, Yuhwan Kim, Younghyun Ju, Youngki Lee, Uichin Lee, Junehwa Song

ACM Mobile Computing and Communication Review, vol. 17, no. 3 (2013) *MC2R 2013*

- In ACM Workshop on Mobile Computing Systems and Applications, Jekyll Island, USA, Feb. 2013
- **Best Demo Award**

[P.02] Towards Crowd-aware Sensing Platform for Metropolitan Environments *Poster*

Saumay Pushp, **Chulhong Min**, Youngki Lee, Chi Harold Lie, Junehwa Song

ACM Conference on Embedded Network Sensor Systems, Toronto, Canada, Nov. 2012 *ACM SenSys 2012*

[D.03] MobiCon: Mobile context monitoring platform, Incorporating Context-awareness to Smartphone-centric Personal Sensor Networks

Youngki Lee, Younghyun Ju, **Chulhong Min**, Jihyun Yu, Junehwa Song

IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks, Seoul, Korea, Jun. 2012 *IEEE SECON 2012*

[P.01] Poster: Towards Mobile GPU-Accelerated Context Processing for Continuous Sensing Applications on Smartphones *Poster*

Chulhong Min, Wookhyun Han, Inseok Hwang, SangJeong Lee, Youngki Lee, Insik Shin, Junehwa Song

ACM International Conference on Mobile Systems, Applications, and Services, Low Wood Bay, Lake District, United Kingdom, Jun. 2012 *ACM MobiSys 2012*

[D.02] Demo: SenseTogether- Cooperative Ambience Monitoring Platform with Continuity and Benefit Awareness *Demo*

Youngki Lee, Younghyun Ju, **Chulhong Min**, Seungwoo Kang, Inseok Hwang, Junehwa Song

ACM International Conference on Mobile Systems, Applications, and Services, Low Wood Bay, Lake District, United Kingdom, Jun. 2012 *ACM MobiSys 2012*

[F.01] SensorShader: Mobile GPU-Accelerated Context Processing Engine for Sensing Applications on Smartphones

Chulhong Min

MobiSys Ph.D. Forum, Low Wood Bay, Lake District, United Kingdom, Jun. 2012 — *MobiSys Ph.D. Forum 2012*

[I.02] Healthopia: Towards Your Well-Being in Everyday Life (Invited Paper) — ***Paper***

Chulhong Min, Chungkuk Yoo, Youngki Lee, Junehwa Song

International Symposium on Applied Sciences in Biomedical and Communication Technologies, Barcelona, Spain, Oct. 2011 — *ISABEL 2011*

[D.01] Demo: CoMon – Resource-aware Cooperative Context Monitoring System for Smartphone-centric Sensor-rich PANs — ***Demo***

Youngki Lee, Younghyun Ju, **Chulhong Min**, Seungwoo Kang, Yunseok Rhee, Junehwa Song

ACM International Conference on Mobile Systems, Applications, and Services, Washington, DC, USA, Jun. 2011 — *ACM MobiSys 2011*

[I.01] A Mobile Context Monitoring Platform for Pervasive Computing Environments (Invited paper)

Youngki Lee, **Chulhong Min**, Younghyun Ju, Saumay Pushp, Junehwa Song

IEEE International Conference on Digital Ecosystems and Technologies Conference, Daejeon, Korea, May 2011 — *IEEE DEST 2011*

Patent

Issued

Communication device for predicting power consumption of mobile application, communication system including same, method of predicting power consumption of mobile application and method of providing predicted power consumption of mobile application, using same — *USA*

US Application No. 10928877B2 — *Feb. 23, 2021*

Mobile apparatus, audio book creating system having the same and method of creating audio book using the same — *South Korea*

Korea Patent No. 10-2019-101591 — *Sep. 02, 2019*

Development assistant apparatus of mobile sensing application, development assistant system having the same, method of assisting development of mobile sensing application using the same — *South Korea*

Korea Patent No. 10-2019-0029298 — *Mar. 20, 2019*

Language delay treatment system and control method for the same — *USA*

U.S. Patent No. 9875668 — *Jan. 23, 2018*

Mobile device executing face-to-face interaction monitoring, method of monitoring face-to-face interaction using the same, and interaction monitoring system including the same, and mobile interaction monitoring application executed on the same — *USA*

U.S. Patent No. 9813879 — *Nov. 7, 2017*

Mobile apparatus supporting cooperative context monitoring, method of cooperative context monitoring using the same and cooperative context monitoring system including the same — *USA*

U.S. Patent No. 9756095 — *Sep. 5, 2017*

Communication apparatus for predicting power consumption of mobile application, communication system having the same, method of predicting power consumption of mobile application — *South Korea*

Korea Patent No. 10-1758267-0000 — *Jul. 10, 2017*

Mobile apparatus for executing sensing flow for mobile context monitoring, method of executing sensing flow using the same, method of context monitoring using the same and context monitoring system including the same — *USA*

U.S. Patent No. 9367664B2 — *Jun. 14, 2016*

Mobile device executing face-to-face interaction monitoring, method of monitoring face-to-face interaction using the same, and interaction monitoring system including the same, and mobile interaction monitoring application executed on the same — *South Korea*

Korea Patent No. 10-1559364-0000 — *Oct. 5, 2015*

Mobile apparatus for executing sensing flow for mobile context monitoring, method of executing sensing flow using the same, method of context monitoring using the same and context monitoring system including the same — *South Korea*

Korea Patent No. 10-1549002-0000 — *Aug. 26, 2015*

Mobile apparatus executing efficient dataflow execution for mobile context monitoring, method of executing dataflow using the same, method of context monitoring using the same and context monitoring system including the same — *USA*

U.S. Patent No. 9015729 — *Apr. 21, 2015*

Language delay treatment system and control method for the same — *South Korea*

Korea Patent No. 10-1478459-0000 — *Dec. 24, 2014*

Mobile apparatus executing efficient dataflow execution for mobile context monitoring, method of executing dataflow using the same, method of context monitoring using the same and context monitoring system including the same — *South Korea*

Korea Patent No. 10-1758267-0000 — *May 29, 2014*

Mobile apparatus supporting context monitoring, method of monitoring context using the same and context monitoring system having the same — *USA*

U.S. Patent No. 8599710 — *Jan. 16, 2014*

Mobile apparatus supporting cooperative context monitoring, method of cooperative context monitoring using the same and cooperative context monitoring system including the same — *South Korea*

Korea Patent No. 10-1394966-0000 — *Sep. 24, 2012*

Mobile apparatus supporting context monitoring, method of monitoring context using the same and context monitoring system having the same — *South Korea*

Korea Patent No. 10-1183124-0000 — *Sep. 10, 2012*

A system for providing group interactive contents — *South Korea*

Korea Patent No. 10-0959591-0000 — *May 17, 2010*

Multi-game supporting system using body-attached sensors and digital sport equipments — *South Korea*

Korea Patent No. 10-0943039-0000 — *Feb. 10, 2010*

Pending

A user authentication based on a blockchain — *Europe*

Europe Application No. 22150646.2A — *Jul. 12, 2023*

System and method for automatic detection of music listening reactions, and mobile device performing the method — *US*

US Application No. 17/565894 — *Jun. 1, 2023*

Providing unlabelled training data for training a computational model — *US*

US Application No. 18/049,138 — *May 18, 2023*

Runtime assessment of sensors — *US*

US Application No. 17/760,629 — *Oct. 20, 2022*

Model modification and deployment — *US*

US Application No. 17/314,244 — *Nov. 11, 2021*

A method for quality-aware runtime assessment of sensing models in multi-device environments — *WO, PCT*

WO, PCT/IB2020/058107 — *Aug 31, 2020*

A System for Equalising Running Times of Human Sensing Applications in Wearable Environments — *GB*

GB, National Patent, 2011855.0 — *Jul 30, 2020*

A Mobile System that Supports Social Mode-enabled Applications through Everyday Social Interaction Monitoring — *Europe*

Europe Patent No. 20275053.5 — *Mar. 5, 2020*

Personalisation of Audio Models via Characterisation and Matching of User Voice Biometrics without Transmission of User's Data — *GB*

GB, National Patent 1916021.7 — *Nov. 4, 2019*

A method for automatic and dynamic configuration of cameras using ear-worn sensors — *Europe*

Europe Patent No. 19158220.4 — *Feb. 20, 2019*

A system for the detection of facial expression on kinetic earables — *Europe*

Europe Patent No. 19161913.9 — *Mar. 14, 2019*

Signal subspace extent determination for Wi-Fi sensing, Application — *Europe*

Europe Patent No. 18194599.9 — *Sep. 14, 2018*

A method for augmenting user interface on earbuds using audio-kinetic model — *Europe*

Europe Patent No. 18188821.5 — *Aug. 14, 2018*

A method for battery-balanced model processing and retraining for separate smart earpieces, Application — *Europe*

Europe Patent No. 17201078.7 — *Nov. 10, 2017*

Occupancy detection using the MIMO structured model for minimising environmental effects, Application — *Europe*

Europe Patent No. 17275148.9 — *Sep. 22, 2017*

Communication apparatus for predicting power consumption of mobile application, communication system having the same, method of predicting power consumption of mobile application — *PCT*

PCT Patent Pending, PCT/KR2017/002548 — *Mar. 9, 2017*

Method for displaying information for user terminal and control equipment for the same — *South Korea*

Korea Patent No. 10-1385195-0000 — *Apr. 8, 2014*

Honors & Awards

2022	**Best Paper Award**, ACM AIChallengeIoT	*Boston, USA*
2019	**Honorable Mention Award**, ACM MobileHCI	*Taipei, Taiwan*
2016	**Outstanding Ph.D. Thesis Award**, KAIST	*South Korea*
2014	**Best Paper Award**, ACM CSCW	*Baltimore, MD, USA*
2013	**Qualcomm Fellowship Award**, Qualcomm	*South Korea*
2013	**Best Demo Award**, ACM HotMobile	*Georgia, USA*

Tutorials

2019	**Building Embedded AI Systems - A Practical Approach**, ACM MobiCom	*Los Cabos, Mexico*
2018	**Designing Connected Data Products**, ACM UbiComp	*Singapore, Singapore*

Talks

Building Collaborative AI Systems for Multi-device Environments — *Southampton, UK*

University of Southampton, Guest Lecture — *Nov. 2022*

Building AI Systems for Collaborative, Interactive, and Privacy-Preserving Applications — *Pohang, South Korea*

Postech, Special Seminar — *Nov. 2022*

Building Collaborative AI Systems for Multi-device Environments — *Ulsan, South Korea*

UNIST, CS Seminar — *Nov. 2022*

The Challenge and Future of Sensory AI Systems: Making On-device AI a Reality — *Online*

SIGMOBILE CEP, Invited Talk — *Mar. 2022*

Earable Computing for Personal-scale Behavioral Analytics — *Daejeon, South Korea*

KAIST, Invited Talk — *Jul. 2021*

What is Next for Sensory AI Systems? A Journey toward Making AI Work in the Real World — *Incheon, South Korea*

Yonsei University, Special Seminar — *Jun. 2021*

What is Next for AI Systems? A Journey toward Making AI Work in the Real World — *Pohang, South Korea*

Postech, Special Seminar — *May 2021*

Sensory AI Software Platform for Multi-device Environments — *Jeju Island, South Korea*

ICTC, Special Session Invited Talk — *Oct. 2020*

Sensory AI Software Platform for Multi-device Environments — *Bologna, Italy*

IEEE SMARTCOMP, Industry Track Invited Talk — *Sep. 2020*

A Closer Look at Quality-Aware Runtime Assessment of Sensing Models in Multi-Device Environments — *New York, USA*

ACM SenSys — *Nov. 2019*

An Early Characterisation of Wearing Variability on Motion Signals for Wearables — *London, UK*

ISWC — *Sep. 2019*

Making AI Work in Multi-device World — *Seoul, South Korea*

Dept. of Computer Science and Engineering, Seoul National University — *Jun. 2019*

An Early Resource Characterisation of Wi-Fi Sensing on Residential Gateways — *Shenzhen, China*

ACM BuildSys — *Nov. 2018*

Cross-Modal Approach for conversational Well-being Monitoring with Multi-Sensory Earables — *Singapore, Singapore*

ACM WellComp — *Oct. 2018*

Exploring Audio and Kinetic Sensing on Earable Devices — *Munich, Germany*

ACM WearSys — *Jun. 2018*

Resource Orchestration Platform for Life-immersive Sensing Applications — *Seoul, South Korea*

Future Internet Forum Workshop — *Oct. 2016*

PADA: Power-aware Development Assistant for Mobile Sensing Applications — *Heidelberg, Germany*

ACM UbiComp — *Sep. 2016*

Ecosystem-wide Support for Power Impact-Awareness for Mobile Sensing Applications — *Antwerp, Belgium*

Nokia Bell Labs — *Sep. 2016*

Ecosystem-centric Power Management for Continuous Sensing Applications — *Sungnam, South Korea*

Naver Labs — *Feb. 2016*

PowerForecaster: Predicting Smartphone Power Impact of Continuous Sensing Applications at Pre-installation Time — *Seoul, South Korea*

ACM SenSys — *Nov. 2015*

Sandra: the More You Walk, the More Battery Your Phone Drains — *Osaka, Japan*

ACM UbiComp — *Sep. 2015*

Exploring Current Practices for Battery Management of Smartwatches — *Osaka, Japan*

ACM ISWC — *Sep. 2015*

An Active Resource Use Orchestration Framework for Mobile Context Monitoring in Sensor-rich Mobile Environments — *Daejeon, South Korea*

Research Center for UX-oriented Mobile Software Platform — *Feb. 2013*

CoMon: Cooperative Ambience Monitoring Platform with Continuity and Benefit Awareness — *Pohang, South Korea*

POSTECH — *Aug. 2012*

SensorShader: Mobile GPU-Accelerated Context Processing Engine for Sensing Applications on Smartphones — *Lake District, UK*

ACM MobiSys PhD Forum — *Aug. 2012*

Scholarly Services

Editorship

2023- **IEEE Pervasive Computing**, Editorial Board

2017- **ACM IMWUT**, Associate Editor

Organising Committee

2024	**ACM MobiSys**, Student travel grants chair	*Tokyo, Japan*
2023	**ACM IASA**, Sponsorship chair	*San Antonio, Texas, USA*
2022	**ACM UbiComp/ISWC**, Workshop chair	*Cambridge, UK and Atlanta, USA*
2022	**ACM IASA**, Program chair	*Portland, Oregon, USA*
2021	**ACM EarComp**, Program chair	*Cyberspace*
2020	**ACM SenSys**, Poster and demo chair	*Yokohama, Japan*
2019	**ACM EarComp**, Local arrangement	*London, United Kingdom*
2019	**ACM WearSys**, Program chair	*Seoul, South Korea*
2019	**ACM MobiSys**, Demo and video chair	*Seoul, South Korea*
2018	**ACM UbiComp**, Publication chair	*Singapore, Singapore*
2017	**IEEE MDM**, Local organising chair	*Daejeon, South Korea*

Program Committee Membership

2023	**ACM IASA**,	*San Antonio, Texas, USA*
2022	**ACM CML-IOT 2022**,	*Boston, USA*
2022	**ACM MobiSys**,	*Portland, OR, USA*
2022	**ACM DIGIBIOM 2022**,	*Portland, OR, USA*
2022	**ACM MobiCom**,	*Sydney, Australia*
2022	**PerCom Industry Track**,	*Pisa, Italy*
2021	**COMSNETS**,	*Bengaluru, India*
2021	**ICMU**,	*Tokyo, Japan*
2021	**MobiQuitous**,	*Beppu, Japan*
2021	**ICMU**,	*Tokyo, Japan*
2021	**ACM HotMobile**,	*Cyberspace*
2021	**COMSNETS**,	*Bengaluru, India*
2021	**MFSens**, co-located with ICDCN	*Nara, Japan*
2020	**WearSys 2020**,	*Toronto, Canada*
2020	**WCNC 2020**,	*Seoul, South Korea*
2020	**COMSNETS 2020**,	*Bengaluru, India*
2019	**ACM EarComp**,	*London, UK*
2019	**PervasiveHealth**,	*Trento, Italy*
2019	**ACM MobiSys**,	*Seoul, South Korea*
2019	**MUSICAL**, co-located with IEEE PerCom	*Kyoto, Japan*
2017	**IEEE MDM**,	*Daejeon, South Korea*
2015	**Embarrassing Interactions**, ACM CHI Workshop	*Seoul, South Korea*
2015	**MobiSys PhD Forum**,	*Florence, Italy*