

Hui CHEN

RESEARCH SPECIALIST · DEPARTMENT OF ELECTRICAL ENGINEERING

Chalmers University of Technology, Gothenburg, Sweden

☎ +46 706430840 | ✉ hui.chen@chalmers.se | 🏠 chenhui07c8.github.io | 📄 Google Scholar | 🌐 Scopus

Research Interests

- **5G/6G Radio Localization & Sensing:** 6D localization; mmWave/THz; near-field; hardware impairment; mobility.
- **RIS-Aided Localization:** sidelink positioning; calibration; layout optimization; profile design; multi-static sensing.
- **ML for Signal Processing:** learning-based localization; stochastic optimization; human-machine interaction.

Professional Experience

Chalmers University of Technology

Gothenburg, Sweden

RESEARCH SPECIALIST (PERMANENT POSITION)

2024.03 - Permanent

POSTDOCTORAL RESEARCHER | SUPERVISOR: PROF. HENK WYMEERSCH (*IEEE Fellow*)

2021.08 - 2023.10

- **6G-DISAC** (6G for Distributed Intelligent Sensing and Communication) (**European Project** | 01/24-Present)
- **Hexa-X-II** (An EU Flagship Project for a Sustainable, Inclusive, and Trustworthy 6G Platform) (**European Project** | 01/23-Present)
- **RISE-6G** (Reconfigurable Intelligent Sustainable Environments for 6G Wireless Networks) (**European Project** | 08/22-10/23)
- **Hexa-X** (A Flagship for B5G/6G Vision and Intelligent Fabric of Technology Enablers) (**European Project** | 08/21-06/23)
- **5GPOS** (5G Cellular Positioning for Vehicular Safety) (**Swedish Project** | 11/21-06/22)

Technology Innovation Institute (TII)

Abu Dhabi, United Arab Emirates

SENIOR RESEARCHER, AI AND DIGITAL SCIENCE RESEARCH CENTER (AIDRC)

2023.10 - 2024.02

- **RIS-aided ISAC** (Reconfigurable Intelligent Surfaces-Aided Integrated Sensing and Communication)

NEOM Smart City

Riyadh, Saudi Arabia

MIXED REALITY DEVELOPER (INTERNSHIP)

2020.03 - 2020.04

- **VR Kitchen** (Virtual Kitchen Simulator for Virtual Agent Training (VR) and Smart Glass (AR))

National Space Science Center (NSSC) - Chinese Academy of Sciences (CAS)

Beijing, China

RESEARCH ASSISTANT | SUPERVISOR: PROF. GUANGJIE ZHAI

2014.08 - 2016.07

- **National Major Scientific Instruments Development Project of China** (Time-to-Digital Converter Circuit Design and Test.)

Education

King Abdullah University of Science and Technology (KAUST)

Thuwal, Saudi Arabia

PH.D. ELECTRICAL & COMPUTER ENGINEERING | SUPERVISOR: PROF. TAREQ AL-NAFFOURI

2016.08 - 2021.08

- Thesis: Stochastic Optimization in Target Positioning and Location-Based Applications
- KAUST Fellowship (Full Tuition Waiver & Monthly Stipend)

University of Chinese Academy of Sciences (UCAS)

Beijing, China

M.S. COMPUTER APPLICATION TECHNOLOGY

2013.09 - 2016.07

- Recommended for Direct Admission without Examinations (Full Tuition Waiver & Monthly Stipend)

Beijing Forestry University

Beijing, China

B.S. ELECTRICAL ENGINEERING

2009.09 - 2013.07

- National Scholarship (Three Times), Outstanding Graduate of Beijing

Research Experience

5G/6G Radio Localization and Sensing

Chalmers, Gothenburg, Sweden

RESEARCH SPECIALIST (FORMER POSTDOC)

2021.08 - Present

- mmWave/THz localization and sensing: hardware impairments (HWI), UE mobility, coverage analysis, layout optimization.
- RIS-aided localization and sensing: sidelink positioning; calibration; cooperative localization; multi-static sensing.
- Learning-based Localization: ML/DL methods for challenging resource allocation and localization scenarios.
- Onsite 5G Positioning Experiments: vehicular positioning using Ericsson 5G base station (Tx) and Silvers mmWave board (Rx).
- Secure Localization: Physical layer localization attack analysis, detection and mitigation.

RIS-aided ISAC (Algorithm Development and Experimental Validation)

AIDRC, TII, Abu Dhabi, UAE

SENIOR RESEARCHER

2023.10 - 2024.02

- Develop RIS-aided ISAC system focusing on auto-calibration of RIS anchors and RL-based beam optimization.
- Evaluate localization, sensing, and beam optimization algorithms using GreenerWave RIS board.

Terahertz-band Signal Localization (THz Localization) for 6G Systems

ISL, KAUST, Thuwal, Saudi Arabia

MAIN RESEARCHER

2020.10 - 2021.08

- Developed a THz MIMO channel simulator with features such as misalignment, spherical wave model, and beam squint effect.
- Provided a detailed tutorial on THz-band signal localization performance analysis and optimization problem formulation.
- Surveyed localization and tracking algorithms with array-of-subarray (AOSA) structure concepts.
- Evaluated the localization performance of mmWave/THz systems, discussed lessons learned, and provided future directions.

Stochastic Optimization in Target Positioning and Location-based Applications

KAUST, Thuwal, Saudi Arabia

MAIN RESEARCHER (PH.D. THESIS)

2016.08 - 2021.08

- Analyzed performance and designed algorithm for joint TDOA/PDOA localization.
- Designed DOA estimation and text classification algorithms for a real-time ultrasonic air-writing system.
- Designed greedy and deep learning (DL)-based antenna selection algorithms for switch-based MIMO systems.
- Designed and tested signals/algorithms for a real-time ultrasonic indoor localization system.

FPGA-based Time-to-Digital Converter

UCAS, Beijing, China

RESEARCH ASSISTANT (M.S. THESIS)

2014.09 - 2016.06

- Designed a digital circuit to measure the time (60ps resolution) between two rising edges of a signal based on Virtex-5 FPGA.
- Developed a user interface using C# language running on Windows OS.

Scholarships, Honors & Awards

SCHOLARSHIPS

- | | | |
|-----------|---|--------------|
| 2016-2021 | KAUST Fellowship , by King Abdullah University of Science and Technology | |
| 2013-2016 | Recommended for Direct Admission to UCAS (top 3%) , Tuition-waiver & Monthly Stipend | |
| 2013 | UCAS Excellent Student Scholarship , by University of Chinese Academy of Sciences | |
| 2010-2012 | National Scholarship (top 2‰) , 3 times, by Ministry of Education of China | ¥8K×3 awards |

HONORS & AWARDS

- | | | |
|------|---|---------------|
| 2023 | Ericsson Research Grant , Localization Security in 5G/6G Networks, Ericsson, Sweden | SEK 30K |
| 2023 | Seal of Excellence (90.4/100) , Marie Curie Fellowship (MSCA-PF), European Commission | |
| 2021 | 1 of the 10 selected teams in 'SMECEYI' Initiative , Swiss Pavilion, Expo Dubai, UAE | |
| 2021 | 1st Place in Digital Innovation Awards-Digital Research Track , by MCIT, KSA | \$21.3K prize |
| 2017 | 4th place in Microsoft Indoor Localization Competition , Pittsburgh, PA, USA | |
| 2013 | 'Outstanding Graduate of Beijing' Award , by Beijing Municipal Commission of Education | |
| 2012 | 1st Prize in Beijing, 3rd Prize in China, iCAN Contest , Wuxi, China | |
| 2011 | 'Merit Student of Beijing' Award , by Beijing Municipal Commission of Education | |

Professional Development & Service

SKILLS

- | | |
|-------------|--|
| Programming | MATLAB, Python (TensorFlow), C# (Unity 3D), C/C++ (Arduino), Verilog, VHDL |
| IT Skills | VR/AR Development, Interactive Simulation & Visualization, 3D Modeling |

TEACHING

- | | |
|-------------|--|
| Spring 2024 | Guest Lecturer , SSY145 Wireless Networks, Chalmers, Sweden |
| Spring 2023 | Guest Lecturer , SSY145 Wireless Networks, Chalmers, Sweden |
| Spring 2023 | Guest Lecturer , SSY135 Wireless Communications, Chalmers, Sweden |
| Fall 2018 | Teaching Assistant , EE242 Digital Communication and Coding, KAUST, KSA |
| Fall 2017 | Teaching Assistant , EE242 Digital Communication and Coding, KAUST, KSA |

OUTREACH

- | | | |
|-----------|--|---------------|
| 2019-2020 | Startup 'Wisensing' Co-founder , TAQADAM Accelerator (2019-Cohort 3) | \$20K funding |
| 2019-2020 | Residential Assistant , Office of Residential Life, Graduate Affairs, KAUST | |

SERVICE & MEMBERSHIP

- **Peer Review:** IEEE Wireless Commun., IEEE Commun. Mag., IEEE COMST, IEEE JSAC, IEEE JSTSP, IEEE TWC, IEEE TCOM, IEEE TSP, IEEE TVT, IEEE OJ-COMS, IEEE WCL, IEEE CL, IEEE SPL, Springer Nature
- **TCP Track Chair/Co-Chair:** VTC-2024 Spring
- **TCP Member:** ICC 2024/2023, PIMRC 2024, VTC-2023 Spring, EuCNC & 6G Summit 2023

- **Memberships:** IEEE Member, Communications Society Member, Vehicular Technology Society Member

Publications

ONGOING WORKS

- [*J23] H. Guo, B. Makki, H. Wymeersch, **H. Chen**, Y. Wu, G. Durisi, M. F. Keskin, M. H. Moghaddam, C. Madapatha, H. Yu, P. Hammarberg, H. Kim, T. Svensson. “Integrated Communication, Localization, and Sensing in 6G D-MIMO Networks.” [Submitted to IEEE Wireless Commun., 2024]
- [*J22] E. Ibrahim, **H. Chen**, Z. Ye, R. Ghazalian, H. Kim, R. Nilsson, H. Wymeersch, and J. Beek. “Inferring Direction and Orientation from Polarized Signals: Feasibility and Bounds.” [Submitted to IEEE JSAC, 2024]
- [*J21] H. Wymeersch, **H. Chen**, H. Guo, M. F. Keskin, B. M. Khorsandi, M. H. Moghaddam, A. Ramirez, K. Schindhelm, A. Stavridis, T. Svensson, and V. Yajnanarayana. “6G Positioning and Sensing Through the Lens of Sustainability, Inclusiveness, and Trustworthiness.” [Submitted to IEEE Veh. Technol. Mag., [arXiv available](#), 2023]
- [*J20] M. Ammous, **H. Chen**, H. Wymeersch and S. Valaee. “Zero Access Points 3D Cooperative Sidelink Positioning via Reconfigurable Intelligent Surface.” [Major Revision, IEEE Trans. Mobile Comput., [arXiv available](#), 2023]
- [*J19] Y. Ge, H. Khosravi, F. Jiang, **H. Chen**, S. Lindberg, P. Hammarberg, H. Kim, O. Brunnegard, O. Eriksson, B.E. Olsson, F. Tufvesson, L. Svensson, and H. Wymeersch. “Experimental Validation of Single BS 5G mmWave Positioning and Mapping for Intelligent Transport.” [Major Revision, IEEE Trans. Veh. Technol., [arXiv available](#), 2023]
- [*B3] “Reconfigurable Metasurfaces for Wireless Communications: Architectures, Modeling, and Optimization (Chapter-Localization and Calibration in RIS-aided Communication Systems).” [Ongoing Springer Book, 2024]

BOOK CHAPTERS

- [B2] “Positioning and Location-based Analytics in 5G and Beyond.” (Chapters 01, 02, and 04), by Stefania Bartoletti (Editor), Nicola Blefari Melazzi (Editor), Wiley-IEEE Press, Sep. 2023]
- [B1] “Towards Sustainable and Trustworthy 6G System: Challenges, Enablers, and Architectural Design.” (Ch04-Towards Joint Communication and Sensing), Jun. 2023 [<https://www.nowpublishers.com/article/BookDetails/9781638282389>]

ARTICLES

- [A1] **H. Chen**, H. Wymeersch. “Phone signals can help you find your way in cities even without GPS.” *Nature News & Views Article*, Nov. 2022. [<https://www.nature.com/articles/d41586-022-03696-3>]

JOURNAL & MAGAZINE PAPERS

- [J18] F. Zhu, X. Wang, C. Huang, A. Alhammedi, **H. Chen**, Z. Zhang, C. Yuen, M. Debbah. “Beamforming Inferring by Conditional WGAN-GP for Holographic Antenna Arrays.” *IEEE Wireless Commun. Lett.*, 2024.
- [J17] **H. Chen**, P. Zheng*, M.F. Keskin, T.Y. Al-Naffouri and H. Wymeersch. “Multi-RIS-Enabled 3D Sidelink Positioning.” *IEEE Trans. Wireless Commun.*, 2024.
- [J16] **H. Chen**, M.F. Keskin, A. Sakhnini, N. Decarli, S. Pollin, D. Dardary, and H. Wymeersch. “Near Field Localization and Sensing for 6G Systems: Features, Opportunities and Challenges.” *IEEE Wireless Commun.*, 2024.
- [J15] **H. Chen**, M.F. Keskin, S. Aghdam, H. Kim, S. Lindberg, A. Wolfgang, T.E. Abrudan, et al. “Modeling and Analysis of OFDM-based 5G/6G Localization under Hardware Impairments.” *IEEE Trans. Wireless Commun.*, 2024.
- [J14] P. Zheng, **H. Chen***, T. Ballal, M. Valkama, H. Wymeersch and T.Y. Al-Naffouri. “JrCUP: Joint RIS Calibration and User Positioning for 6G Wireless Systems.” *IEEE Trans. Wireless Commun.*, 2024.
- [J13] P. Zheng, T. Ballal, **H. Chen***, H. Wymeersch, and T.Y. Al-Naffouri. “Coverage Analysis of Joint Localization and Communication in THz Systems with 3D Arrays.” *IEEE Trans. Wireless Commun.*, May. 2024.
- [J12] H. Kim, **H. Chen***, M.F. Keskin, Y. Ge, K. Keykhosravi, G.C. Alexandropoulos, S. Kim, and H. Wymeersch. “RIS-Enabled and Access-Point-Free Simultaneous Radio Localization and Mapping.” *IEEE Trans. Wireless Commun.*, Apr. 2024.
- [J11] R. Ghazalian, **H. Chen**, G.C. Alexandropoulos, G. Seco-Granados, H. Wymeersch, and R. Jantti. “Joint User Localization and Location Calibration of A Hybrid Reconfigurable Intelligent Surface.” *IEEE Trans. Veh. Technol.*, Jan. 2024.
- [J10] **H. Chen**, H. Kim*, M. Ammous, G. Seco-Granados, G.C. Alexandropoulos, S. Valaee, and H. Wymeersch. “RISs and Sidelink Communications in Smart Cities: The Key to Seamless Localization and Sensing.” *IEEE Commun. Mag.*, Aug. 2023.
- [J9] A. Behravan, V. Yajnanarayana, M.F. Keskin, **H. Chen**, D. Shrestha, T.E. Abrudan, T. Svensson, K. Schindhelm, et al. “Positioning and sensing in 6G: Gaps, Challenges and Opportunities.” *IEEE Veh. Technol. Mag.*, Mar. 2023.

- [J8] **H. Chen**, T. Ballal, M.E. Eltayeb, and T.Y. Al-Naffouri. "Antenna Selection in Switch-Based MIMO Array via DOA Threshold Region Approximation." *IEEE Trans. Veh. Technol.*, Nov. 2022.
- [J7] X. Liu, T. Ballal, **H. Chen**, and T.Y. Al-Naffouri. "Constrained Wrapped Least Squares: A Tool for High Accuracy GNSS Attitude Determination." *IEEE Trans. Instrum. Meas.*, Jul. 2022.
- [J6] **H. Chen**, H. Srieddeen, T. Ballal, H. Wymeersch, M.S. Alouini, and T.Y. Al-Naffouri. "A Tutorial on Terahertz-Band Localization for 6G Communication Systems." *IEEE Commun. Surveys. Tuts.*, May. 2022.
- [J5] S. Tarboush, H. Srieddeen, **H. Chen**, M.H. Loukil, H. Jemma, M.S. Alouini, and T.Y. Al-Naffouri. "TeraMIMO: A Channel Simulator for Wideband Ultra-Massive MIMO THz Communications." *IEEE Trans. Veh. Technol.*, Dec. 2021.
- [J4] **H. Chen**, T. Ballal, and T.Y. Al-Naffouri. "DOA Estimation with Non-Uniform Linear Arrays: A Phase-Difference Projection Approach." *IEEE Wireless Commun. Lett.*, Nov. 2021.
- [J3] X. Ma, T. Ballal, **H. Chen**, O. Aldayel, and T.Y. Al-Naffouri. "A Maximum-Likelihood TDOA Localization Algorithm Using Difference-of-Convex Programming." *IEEE Signal Process. Lett.*, Jan. 2021.
- [J2] **H. Chen**, T. Ballal, A.H. Muqaibel, X. Zhang, and T.Y. Al-Naffouri. "Air-Writing via Receiver Array Based Ultrasonic Source Localization." *IEEE Trans. Instrum. Meas.*, Oct. 2020.
- [J1] **H. Chen**, T. Ballal, N. Saeed, M.S. Alouini, and T.Y. Al-Naffouri. "A Joint TDOA-PDOA Localization Approach Using Particle Swarm Optimization." *IEEE Wireless Commun. Lett.*, Aug. 2020.

PATENTS

- [P2] **Hui Chen**, Tarig Ballal Khidir Ahmed, and Tareq Yousef Al-Naffouri. "Ultrasound Based Air-Writing System and Method." U.S. Patent 11,11630,518, issued on 18-Apr-2023.
- [P1] **Hui Chen**, Tarig Ballal Khidir Ahmed, Mohamed Saadeldin, and Tareq Yousef Al-Naffouri. "Angle-of-Arrival-Based Gesture Recognition System and Method." U.S. Patent 10,386,481, issued on 20-Aug-2019.

TECHNICAL REPORTS/ WHITE PAPERS/ DELIVERABLES

- [R6] Hexa-X-II D4.2: "Radio design and spectrum access requirements and key enablers for 6G evolution." Oct. 2023. (European 6G Flagship Project **Hexa-X-II** Deliverables) [\[Report\]](#) [\[Slides\]](#)
- [R5] Hexa-X D2.4: "Enabling Radio Technologies and Roadmap towards 6G." Jun. 2023. [\[Report\]](#) [\[Slides\]](#)
- [R4] Hexa-X D3.3: "Final models and measurements for localization and sensing." May. 2023. [\[Report\]](#) [\[Slides\]](#)
- [R3] White Paper: "The 6G Architecture Landscape: European Perspective." European Commission, Feb. 2023. [\[Report\]](#)
- [R2] Hexa-X D3.2: "Initial models and measurements for localization and sensing." Oct. 2022. [\[Report\]](#) [\[Slides\]](#)
- [R1] Hexa-X D3.1: "Localization and sensing use cases and gap analysis." Dec. 2021. (European 6G Flagship Project **Hexa-X** Deliverables) [\[Report\]](#) [\[Slides\]](#)

CONFERENCE & WORKSHOP PAPERS

- [C19] **H. Chen**, P. Zheng, Y. Ge, A. Elzanaty, J. He, T.Y. Al-Naffouri, and H. Wymeersch. "ELAA Near-Field Localization and Sensing with Partial Blockage Detection." In *Proc. IEEE PIMRC*, 2024.
- [C18] P. Zheng, **H. Chen**, H. Wymeersch, and T. Y. Al-Naffouri. "Near Field Sidelink Positioning through A Single Active RIS." In *Proc. IEEE GLOBECOM*, 2023.
- [C17] P. Zheng, **H. Chen**, T. Ballal, H. Wymeersch, T. Y. Al-Naffouri. "Misspecified Cramér-Rao Bound of RIS-Aided Localization Under Geometry Mismatch." In *Proc. IEEE ICASSP*, 2023.
- [C16] H. Kim, A. Fascista, **H. Chen**, Y. Ge, G.C. Alexandropoulos, G. Seco-Granados, and H. Wymeersch. "RIS-Aided Monostatic Sensing and Object Detection with Single and Double Bounce Multipath." In *Proc. IEEE ICC Workshop*, 2023.
- [C15] R. Ghazalian, **H. Chen**, G.C. Alexandropoulos, G. Seco-Granados, H. Wymeersch, and R. Jantti. "RIS Position and Orientation Estimation via Multi-Carrier Transmissions and Multiple Receivers." In *Proc. IEEE ICC*, 2023.
- [C14] Y. Lu, **H. Chen**, J. Talvitie, H. Wymeersch, and M. Valkama. "Joint RIS Calibration and Multi-User Positioning." In *Proc. IEEE Vehicular Technology Conference (VTC) workshop*, 2022.
- [C13] **H. Chen**, F. Jiang, Y. Ge, H. Kim, and H. Wymeersch. "Doppler-Enabled Single-Antenna Localization and Mapping without Synchronization." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2022.
- [C12] **H. Chen**, A. Elzanaty, R. Ghazalian, M.F. Keskin, R. Jantti, and H. Wymeersch. "Channel Model Mismatch Analysis for XL-MIMO Systems from a Localization Perspective." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2022.

- [C11] Y. Ge, O. Kaltiokallio, **H. Chen**, F. Jiang, J. Talvitie, M. Valkama, L. Svensson, and H. Wymeersch. "Exploiting Doppler in Bistatic mmWave Radio SLAM." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2022.
- [C10] P. Zheng, T. Ballal, **H. Chen**, H. Wymeersch, and T.Y. Al-Naffouri. "Localization Coverage Analysis of THz Communication Systems with a 3D Array." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2022.
- [C9] R. Ghazalian, K. Keikhorsravi, **H. Chen**, H. Wymeersch, and R. Jantti. "Bi-Static Sensing for Near-Field RIS Localization." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2022.
- [C8] Y. Ge, **H. Chen**, F. Jiang, M. Zhu, H. Khosravi, S. Lindberg, H. Herbertsson, O. Eriksson, O. Brunnegard, B.E. Olsson, P. Hammarberg, F. Tufvesson, L. Svensson, and H. Wymeersch. "Experimental Validation of Single Base Station 5G mmWave Positioning: Initial Findings." In *Proc. IEEE International Conference on Information Fusion (FUSION)*, 2022.
- [C7] H. Wymeersch, A. Parssinen, T.E. Abrudan, A. Wolfgang, K. Haneda, M. Sarajlic, M.E. Leinonen, M.F. Keskin, **H. Chen**, S. Lindberg, P. Kyosti, T. Svensson, and X. Yang. "6G Radio Requirements to Support Integrated Communication, Localization, and Sensing." In *Proc. European Conference on Networks and Communications (EUCNC) & 6G Summit*, 2022.
- [C6] **H. Chen**, S. Aghdam, M.F. Keskin, Y. Wu, S. Lindberg, A. Wolfgang, U. Gustavsson, T. Eriksson, and H. Wymeersch. "MCRB-based Performance Analysis of 6G Localization under Hardware Impairments." In *Proc. IEEE International Conference on Communication (ICC) Workshop*, 2022.
- [C5] **H. Chen**, T. Ballal, and T.Y. Al-Naffouri. "Phase-Difference-Based 3-D Source Localization Using a Compact Receiver Configuration." In *Proc. 28th European Signal Processing Conference (EUSIPCO)*, 2020.
- [C4] **H. Chen**, T. Ballal, X. Liu, and T.Y. Al-Naffouri. "Realtime 2-D DOA Estimation Using Phase-Difference Projection (PDP)." In *Proc. 27th European Signal Processing Conference (EUSIPCO)*, 2019.
- [C3] **H. Chen**, T. Ballal, and T.Y. Al-Naffouri. "A Decomposition Approach for Complex Gesture Recognition Using DTW and Prefix Tree." In *Proc. IEEE Conference on Virtual Reality and 3D User Interfaces (VR)*, 2019.
- [C2] **H. Chen**, T. Ballal, and T.Y. Al-Naffouri. "Fast Phase-Difference-Based DOA Estimation Using Random Ferns." In *Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, 2018.
- [C1] **H. Chen**, T. Ballal, M. Saad, and T.Y. Al-Naffouri. "Angle-of-Arrival-Based Gesture Recognition Using Ultrasonic Multi-frequency Signals." In *Proc. 25th European Signal Processing Conference (EUSIPCO)*, 2017.

DEMOS

- [D4] Abdulwahab Felemban, Lucas Bezerra, **Hui Chen** Yerzhan Orazayev, Mohammed Al-Sharif. "**Smart Tap**." (NEOM AI Challenge Project, 2020) [[Online Page](#)] [[Demo Video](#)]
An AI-controlled tap using a depth camera (graph neural network-based action recognition) is developed to reduce water wastage. Both onside and VR demos are provided.
- [D3] **Hui Chen**. "**Virtual Kitchen Simulator**." (Personal Project, 2020) [[Online Page](#)] [[Demo Video](#)]
A virtual kitchen environment with multiple purposes: user training, behavior analysis, layout optimization, etc.
- [D2] **Hui Chen**, Tarig Ballal, Mohamed Saad, and Tareq Y. Al-Naffouri. "**UBAS: An Ultrasound Based Air-writing System**." (ICASSP Demo session, Calgary, Alberta, Canada, 2018) [[Online Page](#)] [[Demo Video](#)] [[Reference](#)]
An ultrasound-based air mouse with "Mouse", "Keyboard", and "Air-writing" mode.
- [D1] **Hui Chen**, Mohammed Al-Sharif, Mohamed Saad, Tarig Ballal, Chris Bleakley, and Tareq Y. Al-Naffouri. "**KAUST Acoustic Positioning System**." (Microsoft Indoor Localization Competition, IPSN, Pittsburgh, PA, USA, 2017) [[Online Page](#)]
A 3D ultrasonic indoor positioning system for Microsoft Indoor localization competition.

TUTORIALS/TALKS/LECTURES

- [T4] 2024.06: "Localization and Sensing in RIS-Aided Wireless Communication Systems.", **VTC 2024-Spring Tutorial, Singapore**. (Organizers: Prof. Henk Wymeersch, Prof. Davide Dardari, Prof. Hyowon Kim, Hui Chen)
- [T3] 2024.03: "5G/6G Radio Localization Tutorial.", **Localization Training Course (Half-Day) for EU BANYAN Project (Big dAta aNalYtics for radio Access Networks)**. (Host: Dr. Kan Lin and Prof. Jie Zhang)
- [T2] 2023.05: "5G/6G Radio Localization Basics.", **SSY145 Wireless Networks, Guest Lecturer**, Chalmers University of Technology, Gothenburg, Sweden. (Host: Prof. Tommy Svensson)
- [T1] 2023.02: "5G/6G Radio Localization Basics.", **SSY135 Wireless Communications, Guest Lecturer**, Chalmers University of Technology, Gothenburg, Sweden. (Host: Prof. Henk Wymeersch)

SEMINARS/PRESENTATIONS

- [S9] 2023.06: "Localization and Sensing with RISs and Sidelink Communications.", **Communication Systems Seminar**, Chalmers University of Technology, Gothenburg, Sweden.

- [S8] 2022.12: “Doppler-Enabled Single-Antenna Localization and Mapping without Synchronization.”, **GLOBECOM 2022**, Rio de Janeiro, Brazil.
- [S7] 2022.12: “Channel Model Mismatch Analysis for XL-MIMO Systems from a Localization Perspective.”, **GLOBECOM 2022**, Rio de Janeiro, Brazil.
- [S6] 2022.09: “Joint RIS Calibration and Multi-User Positioning.”, **VTC-Fall 2022** (Online), London/Beijing, UK/China.
- [S5] 2022.06: “6G Radio Requirements to Support Integrated Communication, Localization, and Sensing.”, **EUCNC & 6G Summit 2022**, Grenoble, France.
- [S4] 2022.05: “MCRB-based Performance Analysis of 6G Localization under Hardware Impairments.”, **ICC 2022 Workshop** (Online), Seoul, South Korea.
- [S3] 2022.04: “Modeling and Analysis of 5G/6G Localization under Hardware Impairments.”, **Communication Systems Seminar**, Chalmers University of Technology, Gothenburg, Sweden.
- [S2] 2021.01: “Phase-difference-based 3-D Source Localization Using a Compact Receiver Configuration.”, **EUSIPCO 2020** (Online), Amsterdam, Netherlands.
- [S1] 2017.09: “Angle-of-Arrival-Based Gesture Recognition Using Ultrasonic Multi-frequency Signals.”, **EUSIPCO 2017**, Kos, Greece.