Hui CHEN

Research Specialist · Department of Electrical Engineering

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Research Summary

22 Journals | **24** Conf Papers | **2** Book Chapters | **2** Patents | **7** EU Reports | Funding: **240K** EUR | GS citations **900+**, h-/i10-index **17**/**24**

- **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 (Chalmers) — ***Gothenburg, Sweden***
Research Specialist (Permanent Position) — *2024.03 - Permanent*
Postdoctoral Researcher | Supervisor: Prof. Henk Wymeersch (*IEEE Fellow*) — *2021.08 - 2023.10*
- **Radio Localization & Sensing in Communication Systems** (Research activities, project management, supervision tasks)

Nanyang Technological University (NTU) — ***Singapore***
Visiting Scholar | Host: Prof. Lihua Xie (*IEEE Fellow*) — *2024.06 - 2024.07*
- **Cooperative Localization** (System optimization and distributed algorithm development)

Southern University of Science and Technology (SUSTech) — ***Shenzhen, China***
Visiting Scholar | Host: Prof. Peng Zhan — *2024.02 - 2024.03*
- **ISAC for Smart Oceans** (Investigate the Potential of Integrated Sensing and Communication in Smart Ocean Applications)

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)

Technical University of Munich (TUM) — ***Munich, Germany***
Guest Researcher | Host: Prof. Eckehard Steinbach (*IEEE Fellow*) — *2020.09 - 2020.10*
- **HAR**: Human Activity Recognition & Understanding in Virtual Environment

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 — *2014.08 - 2016.07*
- **Time-to-Digital Converter** (FPGA-based Circuit Design, Evaluation and Analysis.)

Education

King Abdullah University of Science and Technology (KAUST) — *Thuwal, Saudi Arabia*
Ph.D. Elec. & Comp. Engineering | Supervisor: Prof. Tareq Al-Naffouri (*IEEE Fellow*) — *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

Projects & Funding

Leading Projects

2024.11-2025.11	***Distributed Active Localization and Sensing in 6G Systems**, International Staff Exchange Grant, Vinnova, Sweden (***PI***)	*SEK 90K*
2025.01-2026.12	**Distributed Multi-Modal Traffic Monitoring with 6G Networks: from Compression to Semantics**, Chalmers Area of Advance Transport-Collaborative Project (***Co-PI***)	*SEK 446K (Total: 2M)*
2025.01-2025.12	***Cooperative Calibration for Enhanced Localization Services in Transport**, Chalmers Area of Advance Transport-Seed Project (***PI***)	*SEK 105K (Total: 415 K)*
2025.01-2025.06	***Onsite Array Calibration fo Joint Localization and Communication Systems**, Chalmers Area of Advance ICT-Seed Project (***PI***)	*SEK 200K (Total: 300 K)*
2023.05-2024.05	***Ericsson Research Grant**, Localization Security in 5G/6G Networks, Ericsson, Sweden (***PI***)	*SEK 30K*

Contributing Projects

2024.02-2026.12	**6G-DISAC** (6G for Distributed Intelligent Sensing and Communication), European Commission (***Task Leader*** | *WP3: Physical Layer Implications and Enablers of ISAC*)	*€ 4.3M*
2024.09-2025.12	**Secure 5G/6G Radio Positioning and Sensing for Transport Systems**, Chalmers Area of Advance Transport-Postdoc Project (***Contributor***)	*SEK 1.6M*
2023.01-2025.03	**HEXA-X-II** (A Holistic Flagship Towards 6G), European Commission (***Contributor*** | *WP4: Radio Evolution and Innovation*)	*€ 23M*
2023.01-2025.02	**Beyond 5G Positioning (B5GPOS)**, Strategic Vehicle R&I, Vinnova, Sweden (***Contributor***)	*SEK 17.5M*
2021.08-2023.12	**RISE-6G** (Reconfigurable Intelligent Sustainable Environments for 6G Wireless Networks), European Commission (***Contributer*** | *WP5: RIS for Enhanced L&S*)	*€ 7M*
2021.08-2023.06	**HEXA-X** (A flagship for B5G/6G vision and intelligent fabric of technology enablers), European Commission (***Main Researcher*** | *WP3: 6D High-resolution L&S*)	*€ 11.9M*
2021.08-2022.06	**5G Positioning (5GPOS)**, Strategic Vehicle Research and Innovation, Vinnova, Sweden	*SEK 13M*

Professional Development & Service

Teaching

Spring 2024	**Guest Lecturer**, SSY145 Wireless Networks (20 students), Chalmers, Sweden
Spring 2023	**Guest Lecturer**, SSY145 Wireless Networks (20 students), Chalmers, Sweden
Spring 2023	**Guest Lecturer**, SSY135 Wireless Communications (20 students), Chalmers, Sweden
Fall 2018	**Teaching Assistant**, EE242 Digital Communication and Coding (15 students), KAUST, KSA
Fall 2017	**Teaching Assistant**, EE242 Digital Communication and Coding (15 students), KAUST, KSA

Outreach

2024.11	**Jury Member**, Huawei Hackathon, B5G localization based on channel charting, Sweden	
2024.10	**Panel Moderator**, Swedish Communication Technology Workshop (Swe-CTW 2024)	
2024.10	**Judging Panel Member**, Best Student Paper Award, IEEE Sweden VT/COM/IT Chapter	
2019.01-2020.12	**Startup 'Wisensing' Co-founder**, TAQADAM Accelerator (2019-Cohort 3)	$*20K funding*

Service & Membership

- **Peer Review**: Nature, IEEE WCM, IEEE COMMAG, IEEE COMST, IEEE JSAC, IEEE JSTSP, IEEE TWC, IEEE TMC, IEEE TCOM, IEEE TSP, IEEE TVT, IEEE TMLCN, IEEE OJ-COMS, IEEE WCL, IEEE CL, IEEE SPL, ACM Comput. Surv., Expert Syst. Appl.
- **TPC Track Chair/Co-Chair**: VTC-2024 Spring
- **TPC Member**: ICC 2025/2024/2023, GLOBECOM 2024, PIMRC 2024, VTC 2025/2024/2023, EuCNC & 6G Summit 2023
- **Memberships**: IEEE Member, Communications Society Member, Vehicular Technology Society Member

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 **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 price*
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

Publications

Ongoing Works

[*J27] Y. Zhang, **H. Chen**, M. F. Keskin, A. Pourafzal, P. Zheng, H. Wymeersch, and T. Y. Al-Naffouri. "Privacy Preservation in MIMO-OFDM Localization Systems: A Beamforming Approach" [Submitted to IEEE Transactions on Vehicular Technology, 2024.]

[*J26] A. Fadakar, M. F. Keskin, **H. Chen**, H. Wymeersch. "Mutual Coupling-Aware Localization for RIS-Assisted ISAC Systems" [Submitted to IEEE Transactions on Cognitive Communications and Networking, 2024.]

[*J25] C. Sun, X. Fang, Y. Ma, **H. Chen**, X. Sun. "Maneuvering Multiple Hypersonic Flight Vehicles via a Hierarchical Control Framework" [Submitted to IEEE Transactions on Aerospace and Electronic Systems, 2024.]

[*J24] R. Ghazalian, P. Zheng, **H. Chen**, C. Ozturk, M. F. Keskin, V. Sciancalepore, S. Gezici, T. Y. Al-Naffouri, H. Wymeersch. "Calibration in RIS-aided Integrated Sensing, Localization and Communication Systems" [Submitted to IEEE Wireless Commun., 2024.]

[*J23] 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.]

[*C28] Y. Ge, O. Kaltiokallio, **H. Chen**, J. Talvitie, Y. Xia, G. Madhusudan, G. Larue, L. Svensson, M. Valkama, and H. Wymeersch. "Target Handover in Distributed Integrated Sensing and Communication." In *[Submitted to ICC 2025].*

[*C27] Y. Zhang, **H. Chen**, P. Zheng, B. Ning, H. Wymeersch, and T. Y. Al-Naffouri. "Optimized Beamforming for Joint Bistatic Positioning and Monostatic Sensing." In *[Submitted to ICC 2025].*

[*C26] A. Pourafzal, **H. Chen**, M. Srinivasan, Y. Zhang, and H. Wymeersch. "Cooperative Impersonation in Angle-based Physical Layer Authentication." In *[Submitted to ICC 2025].*

[*C25] M. Raeisi, **H. Chen**, H. Wymeersch, and E. Basar. "Efficient Localization with Base Station-Integrated Beyond Diagonal RIS." In *[Submitted to ICC 2025].*

[*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

[J22] 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." IEEE Wireless Commun., 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." IEEE Wireless Commun., 2024.

[J20] 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." IEEE Open J. Commun. Soc., 2024.

[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." IEEE Trans. Veh. Technol., 2024.

[J18] F. Zhu, X. Wang, C. Huang, A. Alhammadi, **H. Chen**, Z. Zhang, C. Yuen, M. Debbah. "Beamforming Inferring byConditional 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. Dardari, and H. Wymeersch. "6G localization and sensing in the near field: Features, opportunities, and challenges." *IEEE Wireless Commun.*, Aug. 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.*, Jul. 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.*, Jun. 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. Sarieddeen, 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. Sarieddeen, **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

[R7] Hexa-X-II D4.3: "Early results of 6G Radio Key Enablers." Apr. 2024. [Report] [Slides]

[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

[C24] J. He, C. Vanwynsberghe, **H. Chen**, C. Huang, and A. Fakhreddine. "Device-Free 3D Drone Localization in RIS-Assisted mmWave MIMO Networks." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2024.

[C23] Y. Ge, M. Stark, M. Keskin, **H. Chen**, G. Jornod, T. Hansen, F. Hofmann, and H. Wymeersch. "V2X Sidelink Positioning in FR1: From Ray-Tracing and Channel Estimation to Bayesian Tracking." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2024.

[C22] Y. Zhang, **H. Chen**, and H. Wymeersch. "Privacy Preservation: Artificial Multipath or Artificial Noise." In *Proc. IEEE Global Communications Conference (GLOBECOM)*, 2024.

[C21] B. Sun, M.F. Keskin, M. Rahal, **H. Chen**, J. Talvitie, H. Wymeersch, and M. Valkama. "Near-field RIS-aided Localization Under Channel Non-Stationarity: A Mismatched Model Approach." In *Proc. IEEE Int. Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, 2024.

[C20] M. Srinivasan, L. Senigagliesi, **H. Chen**, A. Chorti, M. Baldi, and H. Wymeersch. "AoA-Based Physical Layer Authentication in Analog Arrays under Impersonation Attacks." In *Proc. IEEE Int. Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, 2024.

[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

[T16] 2024.07: "Multi-RIS-Enabled 3D Sidelink Positioning.", **Centre for System Intelligence and Efficiency Seminar**, Nanyang Technological University, Singapore. (Host: Prof. Lihua Xie)

[T15] 2024.07: "Localization, Sensing, and Calibration in RIS-aided Wireless Communication Systems.", **FCP Seminar**, Singapore University of Technology and Design, Singapore. (Host: Prof. Tony Quek)

[T14] 2024.06: "Localization, Sensing, and Calibration in RIS-aided Wireless Communication Systems.", **EEE Department Technical Seminar**, Nanyang Technological University, Singapore. (Host: NTU EEE Research Staff Association)

[T13] 2024.06: "Localization and Sensing in RIS-Aided Wireless Communication Systems.", **IEEE VTC 2024-Spring Tutorial**, Singapore. (Organizers: Prof. Henk Wymeersch, Prof. Davide Dardari, Prof. Hyowon Kim, Hui Chen)

[T12] 2023.06: "Localization and Sensing with RISs and Sidelink Communications.", **Communication Systems Seminar**, Chalmers University of Technology, Gothenburg, Sweden. (Host: Prof. Fredrik Brännström)

[T11] 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)

[T10] 2023.05: "5G/6G Radio Localization Basics.", **SSY145 Wireless Networks, Guest Lecturer**, Chalmers University of Technology, Gothenburg, Sweden. (Host: Prof. Tommy Svensson)

[T9] 2023.02: "5G/6G Radio Localization Basics.", **SSY135 Wireless Communications, Guest Lecturer**, Chalmers University of Technology, Gothenburg, Sweden. (Host: Prof. Henk Wymeersch)

[T8] 2022.12: "Doppler-Enabled Single-Antenna Localization and Mapping without Synchronization.", **GLOBECOM 2022**, Rio de Janeiro, Brazil.

[T7] 2022.12: "Channel Model Mismatch Analysis for XL-MIMO Systems from a Localization Perspective.", **GLOBECOM 2022**, Rio de Janeiro, Brazil.

[T6] 2022.09: “Joint RIS Calibration and Multi-User Positioning.”, **VTC-Fall 2022** (Online), London/Beijing, UK/China.

[T5] 2022.06: “6G Radio Requirements to Support Integrated Communication, Localization, and Sensing.”, **EUCNC & 6G Summit 2022**, Grenoble, France.

[T4] 2022.05: “MCRB-based Performance Analysis of 6G Localization under Hardware Impairments.”, **ICC 2022 Workshop** (Online), Seoul, South Korea.

[T3] 2022.04: “Modeling and Analysis of 5G/6G Localization under Hardware Impairments.”, **Communication Systems Seminar**, Chalmers University of Technology, Gothenburg, Sweden.

[T2] 2021.01: “Phase-difference-based 3-D Source Localization Using a Compact Receiver Configuration.”, **EUSIPCO 2020** (Online), Amsterdam, Netherlands.

[T1] 2017.09: “Angle-of-Arrival-Based Gesture Recognition Using Ultrasonic Multi-frequency Signals.”, **EUSIPCO 2017**, Kos, Greece.