CURRICULUM VITAE Liang Liu

Liang Liu (19830811-1353), Ph.D.,
Associate Professor, Department of Electrical and Information Technology (EIT), Lund University,
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Education:
B.Sc., Electronic Engineering Department, Fudan University, Shanghai, China, 2005
Ph.D. Degree, Microelectronics Department, Fudan University, Shanghai, China, 2010

Docent:
Circuit Design, Lund University, Dec. 2015

Previous positions:
- **Assistant Professor**, EIT, Lund University, Sweden, 2014-2015
- **Post-Doctoral Researcher**, EIT, Lund University, Sweden, 2010-2014
- **Visiting Researcher**, Electrical, Computer and Systems Engineering Department, Rensselaer Polytechnic Institute (RPI), New York, USA, 12/2009-04/2010

Commissions of trust:
- **Director of International Master Program** on Embedded Electronics Engineering, Lund University, 2019 –
- **Director of post-graduate study**, Department of Electrical and Information Technology, Lund University, 2019
- **PhD committee member**, Yang Xiang Huang, KU Leuven 2017; Fahim Ul Haque, Linköping University, 2016; Markus Hellenbrand, Lund University, 2020
- **Board Member**, Swedish Chapter of the IEEE Joint SSC/CAS Society, 2012 –
- **Organizing Committee Member**, IEEE Swedish System-on-Chip Conference, 2013/2014/2015
- **Best Paper Awards Selection Committee**, IEEE Swedish System-on-Chip Conference, 2014/2015
- **Technical Committee Member**, IEEE CAS Society, Circuits and Systems for Communication, 2015-
- **Technical Committee Member**, IEEE CAS Society, VLSI Systems and Applications, 2013 –
- **Review Committee Member**, IEEE ISCAS 2014 - 2020
- **Technical Committee Member**, Asia-Pacific Signal and Information Processing Association, 2012 –
- **Technical Committee Member**, IEEE ICCVE 2013, IEEE WCNC 2013, IEEE NORCAS 2015-2019, ReConFig 2014, IEEE ASICON 2015, IEEE SIPS 2019
- **Guess Editor,** IEEE Open Journal of Circuits and Systems, Special Section on Circuits, Systems, and Algorithms for Beyond 5G and towards 6G, 2020
- **Special Session Organizer/Chair,** IEEE ISCAS 2020, Asilomar Conference 2020, IEEE SiPS 2021
- **Panelist,** IEEE SiPS 2021 PhD forum
- **Session Chairs** for IEEE ASICON 2015, IEEE ISCAS 2014/2015/2019, IEEE PIMRC 2011, IEEE Vehicular Technology Conference 2013
- **TPC Member**, C-WPAN (china wireless personal area network) working group of China Information Technology Standardization Technical Commission, 2009-2010
- **Reviewer** for 13 international journals and 6 international conferences

Publications:
1 book, 1 book chapter, over 100 papers in peer-reviewed journals and conference proceedings, Citations: 1763, h-index: 18, i10-index: 36, google scholar: https://scholar.google.com/citations?user=iUCjHhgAAAAJ&hl=en

Supervision of post-doc:
- Minkeun Chung, on prototyping mm-wave massive MIMO system
- Dimitar Dikov, on reconfigurable computing for massive MIMO
- Hemanth Prabhu, on digital baseband processing for IoT devices
- Steffen Malkowsky, on ASIP design for machine learning

Supervision of PhD students:
As main supervisor:
- Ilayda Yaman, on efficient processing for 6G and computer vision (PhD started 2021)
- Ali Nada (Halmstad University), on efficient baseband processing for 6G (PhD started 2021)
- Lucas Ferreira, on ASIP design for AI and machine learning (PhD started 2019)

- Sidra Muneer, on per-antenna processing for 5G systems (PhD started 2018)
- Mohammad Attari, on processor design for 5G baseband processing (PhD started 2018)
- Mojtaba Mahdavi, on Next-generation wireless system (Doctoral Degree, 2021)
- Jesús Rodríguez Sánchez, on Algorithm-hardware co-design for massive MIMO (PhD started 2017)
- Rakesh Gangarajaiah, on Hardware architecture for MIMO system (Doctoral Degree, 2017)

As co-supervisor:
- Chenxin Zhang, on Reconfigurable architectures for real-time baseband processing (Doctoral Degree, 2014)
- Oskar Andersson, on Ultra-low power techniques (Doctoral Degree, 2016)
- Yangxurui Liu, on Energy-efficient parallel and reconfigurable computing (Doctoral Degree 2018)
- Steffen Malkowsky, on Reconfigurable computing for wireless systems (Doctoral Degree 2019)
- Muris Sarajlic, on Control of flexible digital receivers (Doctoral Degree, 2019)
- Masoud Nouripayam, on in-memory computing (PhD started 2018)

Honors and awards:
- **Outstanding 28nm FD-SOI Chips** taped out through CMP, 2018 for the first 5G massive MIMO digital baseband processing chip
- **Göran Linds Prize in Electronics**, Royal Physiographic Society of Lund, 2017 for building the world's first 5G massive MIMO testbed and with it setting the world record in wireless spectrum efficiency
- **Invited tutorial** on 5G Circuits and Systems, IEEE Nordic Circuits and Systems Conference, 2017
- My PhD student Steffen Malkowsky (co-supervisor) won **first prize in five of ten prize categories at the 2016 National Instruments Engineering Impact Awards** for breaking the world record on spectrum efficiency
- **Invited Tutorial Paper**, Efficient DSP and Circuit Architectures for Massive MIMO: State of the Art and Future Directions, IEEE Transactions on Signal Processing, 2018
- **IEEE Live Webinar**, Massive Signal Processing for Massive MIMO: Challenges and Lessons Learned, 2016
- Invited Talk, Bring Massive MIMO to Practice, International Workshop on Smart Antennas, 2017
- Invited Talk, Massive MIMO Baseband Processing, MAMMOET Workshop, European Solid-State Circuits Conference, 2016
- **Best Paper Award**, IEEE International Symposium on Circuits and Systems (ISCAS), 2014
- Invited Talk, Massive MIMO with FPGA, Xilinx, Dublin, 2014
- Invited Talk, Enhancing Date Rate with MIMO, IEEE Post-ISCAS conference, 2013
- Invited Talk, Advanced Topics in MIMO and Signaling, UCLA, 2012
- **Shanghai Distinguished PhD Dissertation Award**, 2011
- **Outstanding Reviewer Service**, IEEE Transaction on Signal Processing, 2011
- **Best Paper Award**, IEEE International Symposium on Circuits and Systems (ISCAS), 2010
- Erasmus Mundus External Cooperation Window for China Scholarship for supporting outstanding Chinese post-doc to conduct research in Europe, 2010
- **Outstanding Ph.D. Students Award**, Fudan University, 2010
- **Best Paper Award**, Communication ASIC Design Workshop, 2009

Research projects granted and participated:
- **SSF-CHI Project,** Large Intelligent Surfaces – Architecture and Hardware (2021-)
- **EU H2020-ICT-2020-2 RIA Project**, REINDEER REsilient INteractive applications through hyper Diversity in Energy Efficient RadioWeaves technology (2021-)
- **ELLIIT:** Baseband Processing for Beyond 5G Wireless (2021-)
- **VR Research Grant**, Scalable and Distributed Computing for Large Intelligent Surfaces, (main applicant, 2020-2024)
- **EU H2020-ECSEL Project**, Beyond5, Building the fully European supplY chain on RFSOI, enabling New RF Domains for Sensing, Communication, 5G and beyond, (co-applicant, leader of Lund University team, 2020-2022)
- **Pufendorf Advanced Study Group**, Real-time data processing and decision making, (co-applicant, 2019)
- **Ericsson commissioned research**, Massive MIMO Technology and Applications, (co-applicant, 2018-2022)
- **European Spallation Source (ESS) commissioned research,** Grid Electronics Development Services (co-applicant, 2018-2020)
- **ELLIIT 5G Wireless Communication,** work package 3 baseband processing, (WP Leader)
- **VINNOVA Smart Electronics System Project**, Millimeter-Wave Massive MIMO systems with Smart Beamforming (co- applicant, 2018-2020)
- **Intel-SRC Project**, Coordination in Distributed Multi-User High-Performance Dense Networks, (main applicant, project leader, 05/2016-12/2019)

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- **VINNOVA Smart Electronics System Project**, Prototype System for Massive MIMO in New 5G Band, (main applicant, project leader, 08/2016-08/2018)
- **VINNOVA Smart Electronics System Project**, Electronics System for IoT, (co-applicant, 11/2015-06/2016)
- EU FP7 Project, Massive MIMO for Efficient Transmission, (senior member, 01/2014 -12/2016)
- European Research Council Project, Measurement and Control of Light Fields for Application in Science and Technology (senior member, 05/2014 – 08/2014)
- SSF Project, Digitally assisted Radio Evolution, (senior member, 11/2012 -07/2016)
- SSF Project, High Performance Embedded Computing, (senior member, 01/2012 -12/2016)
- SSF Project, Distributed antenna systems for efficient wireless systems, (senior member, 01/2012 -12/2016)
- VINNOVA Industrial Excellence Center in SoS, (senior member, 08/2010 – 12/2017)

Teaching:

- Computer Architecture, 2015 - (lecturer, course responsible)
- Introduction to Structured VLSI Design, 2013 - (lecturer, course responsible)
- IC Project-1, Digital, 2013 - (lecturer)
- DSP Design, 2013 - (lecturer)
- Consumer Electronics, 2015- (lecturer)
- Electrical Engineering: Possibilities and Limitations, 2015- (lecturer)

International and national collaboration:

Associate Professor Liang Liu has a wide range of both national and international collaboration partners, academic as well as industrial. In areas of efficient algorithm-hardware codesign, strong industrial connections, especially with Ericsson, ARM, and Sony Mobile, are via the competence center SoS and other national projects. In the field of 5G and beyond systems, we have good cooperation with Dr. Thomas L. Marzetta at Bell Labs (now also with NYU). We also collaborate with TEC (Austria), Infineon (Austria), IMEC (Belgium), KU Leuven (Belgium), and TID (Spain) in the EU FP7 project MAMMOET. In EU H2020 project BEYOND5, close collaborations are with TUD (Germany) and KTH. In the area of hardware acceleration for AI and computer vision, Liang is collaborating with Professor Kalle Åström from the Department of Mathematics, Lund University. The collaboration with National Instruments (USA) and Xilinx (USA) is worthwhile to be mentioned, which allows us to have the access to the unique expertise on the processing equipment for the project. Collaborative research on signal processing and reconfigurable hardware design are also with Intel (USA), University of Michigan (USA), and UCLA (USA). Liang has strong collaboration with STMicroelectronics (France) and GlobalFoundries (USA) on using advanced CMOS technologies.