KU Computer Systems Lab

Heechul Yun
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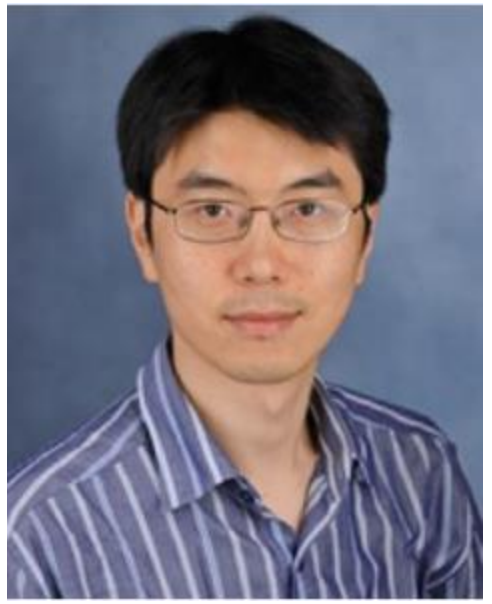
PI: Heechul Yun



- Education
  - UIUC (PhD), KAIST (MS, BS)
- Employment
  - Full/Associate/Assistant Professor, KU EECS
  - Embedded software engineer at Samsung, Researcher at ETRI
- Honors and awards
  - Best Paper Awards: IEEE RTSS'20, RTAS'16
  - Outstanding Paper Awards: IEEE RTCSA'25, RTAS'19, RTAS'16
  - Editor's Pick of the Year Award, IEEE Transactions on Computers, 2016
  - Bellows Faculty Scholar Award, KU SOE, 2023
  - Miller Award, KU EECS, 2019 and 2016
- Google scholar profile (as of August 18, 2025)
  - Total citations: 3480, H-index: 31, i-10 index: 46
- More information
  - https://ittc.ku.edu/~heechul

Lab Members

- Graduate students
  - Cole Ridge Strickler (PhD)
  - Connor Sullivan (PhD)
  - Amin Mamandipoor (PhD)
  - QiTao Weng (MS)
  - Abdalla H Eltom (MS)
- Undergraduate students
  - Tyler Oswald
  - Anderson Riley
  - Jackson Yanek
  - Nickan Safi
  - Montaha Jornaz
  - …

Our Research

- Mission
  - Build computing infrastructure for **intelligent, safe, and secure Cyber Physical Systems (CPS)**

- Research areas
  - Embedded AI/ML, real-time systems, hardware security

Research Sponsors

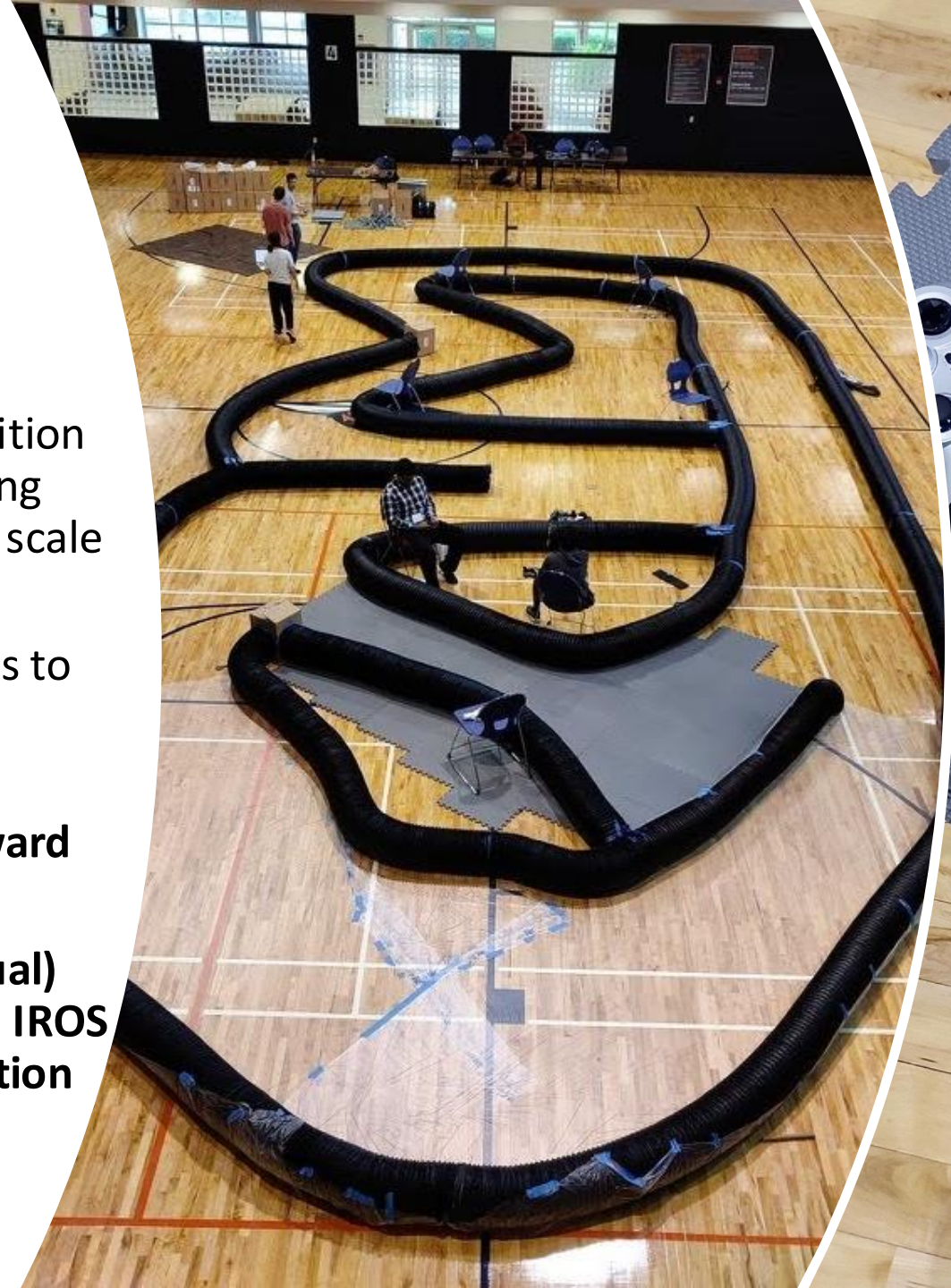
Equipment Sponsors

R1: Embedded AI/ML Research

- Anytime perception
  - We develop ”anytime perception” technologies that can dynamically trade-off accuracy and latency at runtime to maximize performance
  - Recent publications: [RTCSA’25, Outstanding Paper], [EMSOFT’24], [RTCSA’22],
- Efficient on-device training/inference
  - We develop efficient on-device training/inference techniques
  - Recent publications: [MobiSys’25], [CACM’24], [RTSS’20, Best Paper]
- Autonomous racing
  - We develop efficient camera and LiDAR based end-to-end DNN models for autonomous racing (e.g., F1TENTH)
  - Recent publications: [IROS’24][RTCSA’22]

F1TENTH Competition

- International competition for autonomous driving research using 1/10th scale RC cars
- We develop AI models to compete in the competition
- **Won the 3rd place award in CPSIoTWeek 2023.**
- **Won the 1st place (qual) and 3rd place (h2h) in IROS 2024 virtual competition**



R2: Real-time Systems Research

- Real-time multi-core
  - We develop techniques to mitigate shared memory interference in multicore for predictable and certifiable real-time systems
  - Recent publications: [RTSS'24], [TC'24], [RTCSA'23], [RTAS'23], [RTNS'22], [TC'21], [DATE'21], [EMSOFT'20], [RTAS'19, Outstanding Paper]
- On-the-fly data transformation
  - We develop hardware/software co-design techniques in RISC-V SoC to improve efficiency in accessing complex data from memory
  - Recent publications: [ADMS'25]

R3: Hardware Security Research

- Microarchitectural side-channel attacks
  - Modern computer architectures are vulnerable to software-based side-channel attacks (e.g., Spectre, Meltdown, Rowhammer)
  - We develop software/hardware collaborative techniques to mitigate such attacks as well as identifying new attack vectors
  - Recent publications: [JCE'22], [ASHES'20], [DAC'19]

Outreach

- AI summer camps for high school students/teachers