HU CHENG

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📍 Room 431, SHB, The Chinese University of Hong Kong, Shatin, Hong Kong SAR, China

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RESEARCH INTEREST

My research interests include robot vision, pose estimation, pattern recognition, and sensor fusion.

EDUCATION

- **The Chinese University of Hong Kong,** Hong Kong   *Aug 2016 - Present*
  PhD candidate in Department of Electronic Engineering
  Supervisor: Prof. Max Q.-H. Meng

- **Northeastern University,** Shenyang   *Sep 2012 - Jun 2016*
  B.E. in College of Information Science
  GPA: 90.78/100   Rank: 4/277 in Automation

- **University of California San Diego,** San Diego, the USA   *Jun 2019 - Mar 2020*
  Visiting scholar in College of Computer Science and Engineering
  Supervisor: Prof. Hao Su

JOURNAL PUBLICATIONS

(* indicates equal contributions)

- Anchor-Based Multi-Scale Deep Grasp Pose Detector with Encoded Angle Regression
  Hu Cheng*, Yingying Wang*, Max Q.-H. Meng
  IEEE Transactions on Automation Science and Engineering (T-ASE) (JCR Q1, IF: 6.636) (**Accepted**)

- A Robot Grasping System With Single-Stage Anchor-Free Deep Grasp Detector
  Hu Cheng, Yingying Wang, Max Q.-H. Meng
  IEEE Transactions on Instrumentation and Measurement (TIM), 2022 (JCR Q1, IF: 5.332)

- A Vision-Based Robot Grasping System
  Hu Cheng, Yingying Wang, Max Q.-H. Meng
  IEEE Sensors Journal, 2022 (JCR Q1, IF: 4.325)

- Inertial Odometry Using Hybrid Neural Network with Temporal Attention for Pedestrian Localization
  Yingying Wang*, **Hu Cheng***, Max Q.-H. Meng
  IEEE Transactions on Instrumentation and Measurement (TIM), 2022 (JCR Q1, IF: 5.332)

- Spatiotemporal Co-Attention Hybrid Neural Network for Pedestrian Localization Based on 6D IMU
  Yingying Wang, **Hu Cheng**, Max Q.-H. Meng
  IEEE Transactions on Automation Science and Engineering (T-ASE), 2022 (JCR Q1, IF: 6.636)

- Pose-Invariant Inertial Odometry for Pedestrian Localization
  Yingying Wang, **Hu Cheng**, Chaoqun Wang, Max Q.-H. Meng
  IEEE Transactions on Instrumentation and Measurement (TIM), 2021 (JCR Q1, IF: 5.332)

- A Searching Space Constrained Partial to Full Registration Approach With Applications in Airport Trolley Deployment Robot
  Jin Pan, Xiaochun Mai, Chaoqun Wang, Zhe Min, Jiankun Wang, **Hu Cheng**, Tingguang Li, Erli Lyu, Li Liu,

Max Q.-H. Meng

IEEE Sensors Journal, 2020 (JCR Q1, IF: 4.325)

CONFERENCE PUBLICATIONS

(* indicates equal contributions)

- A2DIO: Attention-Driven Deep Inertial Odometry for Pedestrian Localization based on 6D IMU
  Yingying Wang*, **Hu Cheng***, Max Q.-H. Meng
  IEEE International Conference on Robotics and Automation (ICRA), 2022 (CCF-B)

- Grasp Pose Detection from a Single RGB Image
  Hu Cheng, Yingying Wang, Max Q.-H. Meng
  IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021 (CCF-C)

- Pedestrian Motion Tracking by Using Inertial Sensors on the Smartphone
  Yingying Wang*, **Hu Cheng***, Max Q.-H. Meng
  IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020 (CCF-C)

- Real-Time Robot End-Effector Pose Estimation with Deep Network
  Hu Cheng, Yingying Wang, Max Q.-H. Meng
  IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020 (CCF-C)

- High Accuracy and Efficiency Grasp Pose Detection Scheme with Dense Predictions
  Hu Cheng, Danny Ho, Max Q.-H. Meng
  IEEE International Conference on Robotics and Automation (ICRA), 2020 (CCF-B)

- A Grasp Pose Detection Scheme with an End-to-End CNN Regression Approach
  Hu Cheng, Max Q.-H. Meng
  IEEE International Conference on Robotics and Biomimetics (ROBIO), 2018
  T. J. Tarn Best Paper in Robotics Finalist

- Active Semi-supervised Grasp Pose Detection with Geometric Consistency
  Fan Bai, Delong Zhu, **Hu Cheng**, Peng Xu, Max Q.-H. Meng
  IEEE International Conference on Robotics and Biomimetics (ROBIO), 2020

- Autonomous Navigation by Mobile Robots in Human Environments: A Survey
  Jiyu Cheng, **Hu Cheng**, Max Q.-H. Meng, Hong Zhang
  IEEE International Conference on Robotics and Biomimetics (ROBIO), 2018

- An Accurate Localization Scheme for Mobile Robots Using Optical Flow in Dynamic Environments
  Jiyu Cheng, Yuxiang Sun, Wenzheng Chi, Chaoqun Wang, **Hu Cheng**, Max Q.-H. Meng
  IEEE International Conference on Robotics and Biomimetics (ROBIO), 2018

IN SUBMISSION

- FDIO: Extended Kalman Filter-aided Deep Inertial Odometry
  Yingying Wang, **Hu Cheng**, Max Q.-H. Meng
  IEEE International Conference on Advanced Robotics and Mechatronics (ICARM), 2023 (**Under review**)

- From IMU Measurement Sequence to Velocity Estimate Sequence: An Efficient Data-Driven Inertial Odometry Approach
  Yingying Wang, **Hu Cheng**, Ang Zhang, Max Q.-H. Meng
  IEEE Sensors Journal (**Under review**)

- Single-stage Grasp Detector with Rotated Anchors and the Automatic Label Generation
  Hu Cheng, Yingying Wang, Max Q.-H. Meng
  IEEE Transactions on Industrial Informatics (TII) (**Under review**)

- WiFi RSS Fingerprinting for Accurate Pedestrian Indoor Localization
  Yingying Wang, **Hu Cheng**, Max Q.-H. Meng
  Computer Communications (**Under review**)

- Learning to Reorient Objects with Stable Placements Afforded by Extrinsic Supports
  Peng Xu, **Hu Cheng**, Jiankun Wang, Max Q.-H. Meng
  IEEE Transactions on Automation Science and Engineering (T-ASE) (**Under review**)

AWARDS & HONORS

- **Talent Development Scholarship**, Hong Kong Government   *2021*
- **Hong Kong, China - Asia-Pacific Economic Cooperation Scholarship**, Hong Kong Education Bureau   *2021*
- **Reaching Out Award**, Hong Kong Government   *2020*
- **Golden Egg Award**, JD Ltd, Tianjin, China   *2018*
- **Outstanding Student Award**, The Chinese University of Hong Kong, Hong Kong   *2017*
- **National Encouragement Scholarship**, Ministry of Education, PRC   *2015*
- **The Outstanding Student of NEU**, Northeastern University, Shenyang   *2013, 2014*
- **National Scholarship**, Ministry of Education, PRC   *2013, 2014*
- **The First Prize Scholarship**, Northeastern University, Shenyang   *2012, 2013, 2014*

COMPETITIONS

- **Finalist of DJI RoboMaster Manipulation Challenge (ICRA)**, top 5/93   *2017*
- **Second Award in JD Robot Challenge**, top 2/300   *2018*

PROFESSIONAL ACTIVITIES & SERVICES

- **Reviewer**
  *IEEE International Conference on Advanced Robotics and Mechatronics (**ICARM**), 2023*
  *IEEE International Conference on Automation Science and Engineering (**CASE**), 2022*
  *IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2021, 2022*
  *IEEE International Conference on Robotics and Automation (**ICRA**), 2020, 2021, 2022*
  *IEEE International Conference on Robotics and Biomimetics (**ROBIO**), 2019*
  *IEEE Robotics and Automation Letters (**RA-L**)*

- **Session Chair**
  *IEEE International Conference on Robotics and Automation (**ICRA**), 2021*
  *IEEE International Conference on Advanced Robotics (**ICAR**), 2019*
  *IEEE International Conference on Information and Automation (**ICIA**), 2018*

TEACHING EXPERIENCE

- **Teaching Assistant at CUHK**   2017 spring
  Tutorial on course BMEG2011: Biomedical Engineering Laboratory

- **Teaching Assistant at CUHK** 2016 fall, 2017 fall
  Tutorial on course BMEG3101: Medical Instrument and Design

- **Teaching Assistant at CUHK** 2018 fall
  Tutorial on course ENGG 2420A: Complex Analysis and Differential Equations for Engineers

PROFESSIONAL SKILLS

- **Programming Skills:** Python, MATLAB, C, C++, etc

- **Tools:** TensorFlow, PyTorch, ROS, Solidworks, etc

程虎
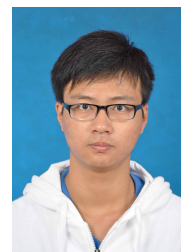
👤 性别: 男　出生年月: 1995 年 12 月　籍贯: 安徽省安庆市

📍 中国香港，沙田，香港中文大学，何善衡工程学大楼 431

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研究方向

机器视觉，位姿估计，模式识别以及多传感器融合

教育经历

- **香港中文大学**，中国香港   *2016.08 - 现在*
  电子工程系博士研究生
  导师: 孟庆虎教授

- **东北大学**，沈阳   *2012.09 - 2016.06*
  自动化专业，信息学院工学学士
  绩点: 90.78/100　排名: 4/277

- **加州大学圣地亚哥分校**，圣地亚哥，美国   *2019.06 - 2020.03*
  计算机科学与工程学院访问学者
  导师: 苏昊教授

期刊论文

(* 表示共同一作)

- Anchor-Based Multi-Scale Deep Grasp Pose Detector with Encoded Angle Regression
  Hu Cheng*, Yingying Wang*, Max Q.-H. Meng
  IEEE Transactions on Automation Science and Engineering (T-ASE) (SCI, 影响因子:6.636, JCR 一区)（**已接收**）

- A Robot Grasping System With Single-Stage Anchor-Free Deep Grasp Detector
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会议论文

(* 表示共同一作)

- A2DIO: Attention-Driven Deep Inertial Odometry for Pedestrian Localization based on 6D IMU

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- An Accurate Localization Scheme for Mobile Robots Using Optical Flow in Dynamic Environments

  Jiyu Cheng, Yuxiang Sun, Wenzheng Chi, Chaoqun Wang, **Hu Cheng**, Max Q.-H. Meng

  IEEE International Conference on Robotics and Biomimetics (ROBIO), 2018

在投论文

- From IMU Measurement Sequence to Velocity Estimate Sequence: An Efficient Data-Driven Inertial Odometry Approach
  Yingying Wang, **Hu Cheng**, Ang Zhang, Max Q.-H. Meng
  IEEE Sensors Journal (**二轮审稿中**)

- Single-stage Grasp Detector with Rotated Anchors and the Automatic Label Generation
  Hu Cheng, Yingying Wang, Max Q.-H. Meng
  IEEE Transactions on Industrial Informatics (TII) (**已投审稿中**)

- WiFi RSS Fingerprinting for Accurate Pedestrian Indoor Localization
  Yingying Wang, **Hu Cheng**, Max Q.-H. Meng
  Computer Communications (**已投审稿中**)

- Learning to Reorient Objects with Stable Placements Afforded by Extrinsic Supports
  Peng Xu, **Hu Cheng**, Jiankun Wang, Max Q.-H. Meng
  IEEE Transactions on Automation Science and Engineering (T-ASE) (**二轮审稿中**)

- FDIO: Extended Kalman Filter-aided Deep Inertial Odometry
  Yingying Wang, Hu Cheng, Max Q.-H. Meng
  IEEE International Conference on Advanced Robotics and Mechatronics (ICARM), 2023 (**已投审稿中**)

奖项与荣誉

- **才艺发展奖学金**，香港政府 *2021*
- **中国香港 - APEC 奖学金**，香港教育局 *2021*
- **外展体验奖**，香港政府 *2020*
- **金蛋奖**，京东 *2018*
- **杰出学生奖**，香港中文大学 *2017*
- **国家励志奖学金**，教育部 *2015*
- **东北大学优秀学生**，东北大学 *2013, 2014*
- **国家奖学金**，教育部 *2013, 2014*
- **优秀学生一等奖学金**，东北大学 *2012, 2013, 2014*

竞赛

- **大疆机甲大师抓取挑战赛提名奖**，排名：5/93 *2017*
- **京东机器人挑战赛第二名**，排名：2/300 *2018*

学术活动及服务

- **审稿人**
  IEEE International Conference on Advanced Robotics and Mechatronics (ICARM), 2023

IEEE International Conference on Automation Science and Engineering (CASE), 2022

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021, 2022

IEEE International Conference on Robotics and Automation (ICRA), 2020, 2021, 2022

IEEE International Conference on Robotics and Biomimetics (ROBIO), 2019

IEEE Robotics and Automation Letters (RA-L)

- **会议主席**

  IEEE International Conference on Robotics and Automation (ICRA), 2021

  IEEE International Conference on Advanced Robotics (ICAR), 2019

  IEEE International Conference on Information and Automation (ICIA), 2018

助教经历

- 香港中文大学助教   2017 春
  课程 *BMEG2011: Biomedical Engineering Laboratory*

- 香港中文大学助教   2016 秋，2017 秋
  课程 *BMEG3101: Medical Instrument and Design*

- 香港中文大学助教   2018
  课程 *ENGG 2420A: Complex Analysis and Differential Equations for Engineers*

专业技能

- 程序语言: Python, MATLAB, C, C++, 等

- 工具: TensorFlow, PyTorch, ROS, Solidworks, PyBullet 等