Yang Chen

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Education

- **Jilin University** *Sep. 2013-Jun. 2017*
  Bachelor of Engineering in Mechanical Engineering (Excellent Engineers Training Plan, Ministry of Education)
  Supervised by Prof. DongF. Wang
  Bachelor thesis: *Explore the Way of Designing the Piezoelectric Dividing Structure to Both Realize the Stress Distributing Evenly and Achieve Largest Output Voltage*
- **École polytechnique fédérale de Lausanne (EPFL)** *Aug. 2019-Oct. 2020*
  Visiting student
  Research topic: Autonomous docking system for a standing mobility device
  Supervised by Prof. Aude Billard
- **University of Tsukuba** *Apr. 2018-Mar. 2023*
  Research student *Oct. 2017-Apr. 2018*
  Master of Human Informatics *Apr. 2018-Mar. 2020*
  Ph. D Program in Empowerment Informatics (Special Fellow Scholarship) *Apr. 2018-Mar. 2023*
  Supervised by Prof. Kenji Suzuki
  Master thesis: *Torso Control System and Autonomous Docking Support for a Standing Mobility Device*

Current Main Projects

- **Control interface for hands-free navigation of personal mobility vehicles** *Oct. 2017-Present*
  This work aims to explore an intuitive and simple control interface for personal mobility devices that would allow hands-free locomotion.
- **Virtual landmark based control of docking support for assistive mobility devices** *Oct. 2018-Present*
  This works proposes an autonomous docking support approach for assistive mobility devices like intelligent wheelchairs to assists the user in approaching a rest surface, such as a chair or bed.
- **Tsukuba smart city project** *Aug. 2020-Present*
  In this project, my current work is to compare the risk perception of pedestrian when different personal mobility devices such as standing mobility device, normal wheelchair, scooter, electrical car cart buggy are used on the road.

Other Scientific Research Experience

- **National Training Programs of Innovation for Undergraduates** *May 2015-Sep. 2016*
  We developed a movable child restraint system based on four-bar linkage and analyzed child injury in car collision based on MADYMO, the injury reduced about 17%.
- **MEMS Laboratory of Jilin University** *Apr. 2016-Jun. 2017*
  I explored the way of designing the piezoelectric dividing structure to both realize the stress distributing evenly and achieve largest output voltage.
- **EMP Project Based Research** *Apr. 2018-Dec. 2018*
  With using the world's largest virtual reality system: Large Space, we developed a VR Alice's experience system, our research question is: "Does human body size affect recognition of environment?".
- **Challenge Grant 2019** *Apr. 2019-Feb. 2020*
  We developed a tennis wheelchair for wheelchair user.
- **Abema TV project** *Apr. 2019-Feb. 2020*
  We developed a wearable personal mobility device: Wemo, which has a wheeled locomotion function on flat surface and can be folded during user's stair-climbing.
- **Challenge Grant 2020** *Oct. 2020-Present*
  We aim to develop a VR wheelchair tennis system with real-time force feedback.

Publication & Proceedings

- D. Paez-Granados, M. Hassan, Y. Chen, H. Kadone, & K. Suzuki, "Passive Synchronous Exoskeleton: Optimizing Human-Robot Energy Transfer for Assisted Postural Transition", IEEE/ASME Transactions on Mechatronics, 2021. (*Under revision*)
- Y. Chen, D. Paez-Granados, B. Leme, and K. Suzuki, "Virtual Landmark Based Control of Docking Support for Assistive Mobility Devices", IEEE/ASME Transactions on Mechatronics, 2021 *(Accepted)*

- Y. Chen, D. Paez-Granados, H. Kadone, and K. Suzuki, “Control interface for hands-free navigation of standing mobility vehicles based on upper-body natural movements,” in 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems. IEEE, 2020 (Oral)
- Yang Chen, Diego Paez-Granados, Kenji Suzuki, “Holistic Body Machine Interface Solution for Standing Mobility Vehicle for the Lower-body Impaired, –Integrating Autonomous Docking System–”, ロボティクス・メカトロニクス講演会 2020 (ROBOMEC 2020)， 金沢，2020. (Poster)
- Yang, C., Paez, D. and Suzuki, K., "Torso Control System with a Sensory Safety Bar for a Standing Mobility Device," Proc. of the 2019 IEEE International Symposium on Micro-NanoMechatronics and Human Science (MHS2019), 2019. (Oral)
- Chen Yang, Diego Paez-Granados, Kenji Suzuki, “Upper-Body Sensing Based Control System with Docking Support on A Standing Mobility Device”, 生体医工学シンポジウム, 予稿・抄録集, 2019, 1A-23. (Poster)
- Liu Y, Chen Y, Wang D F, et al. Developing MEMS electric current sensors for end use monitoring of power supply: Part VIII-segmentation design and empirical analysis of piezoelectric layers based on cantilever beam structure[C]//2018 Symposium on Design, Test, Integration & Packaging of MEMS and MOEMS (DTIP). IEEE, 2018: 1-4.

Honors & Awards

- Jilin University third-class scholarship *Sep. 2015 & Sep. 2016*
- Mathematical Modeling Contest Third Prize *Dec. 2015*
- 1st prize in First Robot Competition of Jilin University *Mar. 2017-May 2017*
- Finalist (5/80, $500,000 grant received) in Toyota Mobility Unlimited Challenge *Apr. 2018-Dec. 2020*
  The $4 million Mobility Unlimited Challenge supports radical improvements in the mobility and independence of people with lower-limb paralysis through smarter assistive technology. We (Team Qolo) developed a mobile exoskeleton on wheels, allowing users to sit or stand with ease.

Activities

- Interdisciplinary Workshop for Leading Students 2018 (IW4LS): 1st prize in final presentation *Apr. 2018*
- Summer workshop Vitality& City in Netherlands *Aug. 2018*
- Summer workshop in Waseda University: 1st prize in final presentation *Oct. 2018*
- Visit Shiseido Museum, NEC laboratory, Hitachi laboratory, Fujitsu laboratory

Languages

- Chinese(native), English, a little bit Japanese

Computer skills

- CATIA, AutoCAD, Fusion 360, EAGLE, MATLAB, Arduino programming, Python, C++, Linux, ROS