Zhongtao(Tony) Guan

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Education and Research Experience

- **ShanghaiTech University** *Sep. 2021 - Present*
  Bachelor of Engineering, Electronic Information Engineering Shanghai, China
  - GPA: 3.80/4.00; Ranking 3/56
  - Core courses: Introduction to Control, Signals and Systems, Electromagnetic, Power Electronics
  - Honors: Outstanding Teaching assistant(Head TA of Electric Circuit); Excellent Student
  - Scholarship: Undergrad. National Exchange Scholarship(80k); International Conference Scholarship(15k)

- **Massachusetts Institute of Technology** *Feb. 2024 - May.2024*
  Special Student Program in EECS Cambridge, Massachusetts, U.S.
  - GPA: 5.00/5.00
  - Core courses: Underactuated Robotics, Nonlinear Control

- **Massachusetts Institute of Technology** *July. 2024 - Present*
  Undergraduate Visiting Student in EECS Cambridge, Massachusetts, U.S.
  - Advisor: Kevin Chen

Publications

C=Conference, J=Journal, S=In Submission, +=equal contribution

[S.1] Yi-Hsuan Hsiao^{+}, Songnan Bai^{+}, **Zhongtao Guan**$^{+}$, et al. **Hybrid locomotion at the insect scale combined flying and jumping for enhanced efficiency and efficacy**. Manuscript submitted for publication in *Nature Machine Intelligence*.

[C.1] **Zhongtao Guan**, et al. **Preliminary Result of Cury: A Backdrivable Leg Design using Linear Actuators**. In *IEEE/RSJ International Conference on Intelligent Robots and Systems(IROS), 2024*.

[C.2] **Zhongtao Guan**, et al. **Accurate Single-Ended Fault Location for Cable-OHL Hybrid Transmission Lines**. In *Power and Energy Society General Meeting (PESGM), 2023*.

[C.3] Jiayu Yang, Yu Liu, Kang Yue, **Zhongtao Guan**, et al. **Closed-Form Solutions of Mutual Inductance and Load for LCC-S Wireless Power Transfer Systems**. In *3rd IEEE International Conference on Industrial Electronics for Sustainable Energy Systems, 2023*.

[C.4] Mengzhao Duan, Yu Liu, Ze Liu, Xinchen Zou and **Zhongtao Guan**. **A Group of Single-Ended Time-Domain Line Fault Location Methods Using Breaker Operation Information**. In *IEEE Power and Energy Society General Meeting (PESGM), 2023*.

Projects

- **Implicit Regularization and Dynamic Gain in Nonlinear Control** *Sep. 2023- Jan. 2024*
  Advisor: Prof. Jiahao Chen, Prof. Jean-Jacques Slotine
  * Place Holder

- **Sensor Autonomy for Insect-Scale Robots** *July. 2024- Present*
  Advisor: Prof. Kevin Chen
  * Place Holder

- **Hybrid Locomotion at Insect-Scale** *Jan. 2024- Sep. 2024*
  Advisor: Prof. Kevin Chen, Prof. Russ Tedrake
  * Presented a sub-gram flapping-wing hopper using soft actuator.
  * Abilities include overcoming obstacle, adapting challenging terrains and high agility.
  * Trajectory optimization and online NLMPC are used for complex task such as fast dynamic between slopes.
  * Contribute to controller design experiments and data processing.
  * This work is part of final project of Underactuated Robots and submitted to a journal: [S.1].

◦ **A Backdrivable Leg Design Using Linear Actuators** *Aug. 2023 - Jan. 2024*
Advisor: Prof. Jiahao Chen [ ]
∗ Developed a backdrivable 2-DoF leg prototype for the walking and jumping.
∗ Built simulation environment under Webots for closed-loop chain dynamics simulation.
∗ Acted as the project leader; responsible for mechatronics design and simulation.
∗ This work is accepted as a conference paper: [C.1]

◦ **Fault Location of Power Systems** *Jun. 2022-Jan. 2023*
Advisor: Prof. Yu Liu
∗ Proposed methods for locating single-phase faults on hybrid or traditional power system.
∗ Utilized fully distributed model of cable and overhead-line; modified Eriksson method.
∗ Introduced breaker operation information for fault location of pure overhead-line power system.
∗ These works are accepted as conference paper [C.2], [C.4].

◦ **Design and Control of Inverter** *Jan. 2023 - Aug. 2023*
Advisor: Prof. Yu Liu
∗ Designed and controlled a three-phase inverter for grid-connected photovoltaic systems.
∗ Included knowledge of device selection, embedded system, SVPWM and PLL.
∗ Contributed to a conference paper [C.3] and National Undergraduate Electronic Design Contest.

SKILLS AND OTHERS

◦ **Programming Languages:** Python, C/C++, Julia, Matlab
◦ **Toolkit:** Simulink, Altuim Designer, KiCAD, Solidworks, LaTeX
◦ **Competition:** 2nd Prize of National Undergraduate Electronic Design Contest (Shanghai Division); 2nd Prize of RoboMaster University Championship (Eastern Division); 3rd Prize of RoboMaster University Championship (National)
◦ **Research:**

REFERENCES