Gaole Dai

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Shen Yuan Honors College, Beihang University, Beijing, China, B.E., Student ID: 18376165

EDUCATION

Bachelor, Automation, Beihang University, **expected to be with honors**.   2018-Present

In Beihang, **only 5% of students are expected to be with honors, and I rank Top 4% among them**

GPA: 3.90/4.00   Average Points: 93/100   TOEFL *MyBest* Score*:* 108; *A single test:* 105

Student, Hubei Wuchang Experimental High School. *Gao Kao* Ranking: Top 0.2%.   2015-2018

Skills: Proficient in C, Python, MATLAB, Multisim, Proteus, Arduino, and LaTeX

Research Interests: Cyber-Physical Systems, Control and Optimization

PUBLICATIONS

[1] **G. Dai** *et al.* "Collaboration Tiredness Aware Manufacturing Service Collaboration Incentive and Optimization," *IEEE Transactions on Industrial Informatics*, Reject & Resubmit, being revised.

[2] X. Zhu, Y.R. Zheng, and **G. Dai**, "Low-cost Calibration of Inertial Measurement Unit for Accurate Position Estimation," *Global Oceans 2020: Singapore – U.S. Gulf Coast*, 2020, pp. 1-8.

RESEARCH EXPERIENCE

May 2021-Aug. 2021	Department of Computing and Software, McMaster University, Canada
Topic:	**Human Motion Analysis. Advisor: Prof. Rong Zheng,** *Canada Research Chair*
Content:	Carried out joint angles estimation for Gait Analysis with 9 IMUs on lower limbs.
Contributions:	1. Investigated calibration-free methods and deep learning frameworks;
	2. Formulated a novel joint angles estimation framework;
	2. Designed a new drift-free algorithm, which saved the need for Magnetometer;
	3. Proposed and proved *quaternion back-propagation* to eliminate bias.
Oct. 2020-May 2021	School of Automation Science & Electrical Engineering, Beihang University, China
Topic:	**Dynamic Scheduling. Advisor: Prof. Fei Tao,** *Changjiang Chair*
Content:	Incorporated the open-loop control into the dynamic scheduling for incentive.
Contributions:	1. Defined a new term, *collaboration tiredness*, to describe the collaboration willingness of stakeholders on the Industrial Internet Platform;
	2. Formulated a new long-term dynamic utility model;
	3. Proposed a novel incentive scheduling strategy.
July 2020-Oct. 2020	Department of Electrical & Computer Engineering, Lehigh University, USA
Topic:	**Underwater IoT. Advisor: Prof. Yahong Rosa Zheng,** *IEEE Fellow*
Content:	Worked on underwater localization for a datalogger with one IMU.
Contributions:	1. Carried out IMU sensors calibration, data collecting, and data pre-processing;
	2. Implemented novel data fusion algorithms. **Improved accuracy by 17%.**
Feb. 2020-July 2020	School of Automation Science & Electrical Engineering, Beihang University, China
Topic:	**Short/Long-term Scheduling/Rescheduling. Advisor: Prof. Fei Tao**
Content:	Investigated optimization algorithms and scheduling/rescheduling strategies.
Contributions:	1. Proposed a novel *cut-in* method for rescheduling considering disturbances;
	2. Compared strategies and algorithms of scheduling and rescheduling.

"When shall I reach the top and hold all mountains in a single glance"

PROGRAMMES EXPERIENCE

Sep. 2021-Oct. 2021	School of Computer Science and Engineering, Nanyang Technological University
Topic:	**Human Activity Recognition. Advisor: Prof. Li Mo,** *IEEE Fellow*
Content:	Investigated contrastive self-supervised learning for wearable sensing.
Contributions:	1. Reached similar accuracy with supervised learning using 10 times fewer labels;
	2. Proposed new transformations for contrastive learning to ease model training.
Nov. 2020-Dec. 2020	School of Automation Science & Electrical Engineering, Beihang University
Topic:	**Two Wheels Self-balancing Intelligent Vehicle** [Curriculum Project]
Contributions:	1. Achieved path recognition with one linear CCD;
	2. Proposed a new direction control model.
Oct. 2020-Dec. 2020	School of Automation Science & Electrical Engineering, Beihang University
Topic:	**Speech Recognition based Automatic Door Opening with One Manipulator**
Contributions:	1. Designed speech recognition circuits and manipulator control circuits;
	2. Designed one manipulator, including kinematics, dynamics, and control strategy.
July 6th - 17th 2020	**Cambridge Online Academic Training Programme, University of Cambridge**
Content:	Professors were invited to give Computer Science related academic seminars.

SELECTED AWARDS & GRANTS

Competitions:

Meritorious Award of American Mathematical Contest in Modeling (Top 7%)	2021
Honorable Mention Award of American Mathematical Contest in Modeling	2020
2nd Award of Contemporary Undergraduate Mathematical Contest in Modeling	
(Top 3.5% among 42k groups)	2020
2nd Award of The Chinese Mathematics Competitions	2020
3rd Award of The Chinese Mathematics Competitions	2019
3rd Award of National Physics Competitions for College Students in China	2019

Scholarships & Honors:

Canada Mitacs Globalink Research Internship Award	2021
China National Scholarship, Highest Scholarship in China (Top 2%)	2021
First Class Scholarship for Excellent Students in Beihang University (Top 5%)	2020
Second Class Scholarship for Excellent Students in Beihang University (Top 10%)	2019
Phoenix Student, Highest Honor for students in Hubei Wuchang Experimental High School	2018

PRESENTATION

[1] **G. Dai**, "International Online Academic Programs for Honors Undergraduates during 2020," *Honors College Conference, Krasnoyarsk 2020*. Introduced the International Online Academic Programs for honors undergraduates in Shen Yuan Honors College as a student representative.

EXTRACURRICULAR ACTIVITIES

Hobbies: reading, jogging, and playing basketball

● Volunteer time: **316h, One-Star Volunteer**	2018-Present
● Mentor of five freshmen in Beihang University	2019-2020
● Champion of the Youth Debate Competition of Shou E College, Team Leader	2019
● A hot-water supply schedule reform of Beihang University, Team Leader	2019

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