

Yang Wang

Learning-based Control, Optimization, Machine Learning, Robotics

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EDUCATION

Technical University of Kaiserslautern	Kaiserslautern, Germany
Master of Science in Electrical and Computer Engineering, CGPA: 1.6/1.0	10/2019–03/2022
Swiss Federal Institute of Technology in Lausanne	Lausanne, Switzerland
Visiting Student for Master's Thesis at Automatic Control Laboratory, Grade: 1.0/1.0	10/2021–03/2022
Polytechnic University of Catalonia	Barcelona, Spain
Erasmus Exchange Student in Automatic Control and Robotics, GPA: 8.14/10.00	03/2021–07/2021
Tomsk Polytechnic University (Double Degree)	Tomsk, Russia
Bachelor of Science in Automation of Technological Processes and Production, CGPA: 4.74/5.00	08/2016–06/2018
Shenyang Ligong University (Double Degree)	Shenyang, China
Bachelor of Science in Automation, CGPA: 90/100, Top 3%	09/2014–07/2016

RESEARCH EXPERIENCES

Master's Thesis Project	Lausanne, Switzerland
Automatic Control Laboratory, Swiss Federal Institute of Technology in Lausanne	10/2021-03/2022
<ul style="list-style-type: none">– Developed a black-box safe optimization algorithm for non-linear, non-convex optimization problems;– Numerical Optimization, Bayesian Optimization, Gaussian Process, Convergence and Safety Analyses;– Matlab, Yalmip, Mosek, Python, Academic Presentation, Scientific Writing.	
Student Research Assistant	Kaiserslautern, Germany
SmartFactory-KL, German Research Center for Artificial Intelligence	10/2021-03/2022
<ul style="list-style-type: none">– Integrated multiple identification benchmarks into a continuous-time neural network prediction model;– Neural ODEs, Runge-Kutta Methods, Euler Method, Dynamic System Analysis;– Tools: PyTorch, SciPy, NumPy, matplotlib, Pandas, Git.	
Seminar Project	Kaiserslautern, Germany
Chair of Automation and Control, Technical University of Kaiserslautern	05/2020-09/2020
<ul style="list-style-type: none">– Topic: Learning robotic movements from human demonstrations with obstacle avoidance;– Dynamic Movement Primitives, Potential Field Method, Robotic Dynamics;– Matlab, Data Analysis, Scientific Writing, Academic Presentation.	

WORK EXPERIENCES

Guangzhou Zhihuihe Education Technology Co., Ltd.	Guangzhou, China
High School STEM Teacher	10/2018-07/2019
<ul style="list-style-type: none">– Prepared and taught STEM (Science, Technology, Engineering, Math) classes to high school students;– Mechanical structure construction, Microcontroller programming, CAD modelling, PCB design and soldering;– Motivated students' interests in science and engineering, encouraged their critical thinking, and trained their problem-solving ability.	

PROJECTS

- **Linear/Nonlinear MPC Controller Designs in Case Studies**

Designed a linear MPC controller for water level control of a Quadruple-Tanks System using Yalmip, and a nonlinear MPC controller for the component concentration control of a chemical process using package CasADi.

- **Human Speech Emotion Recognition using CNN and LSTM Network**

Collected and processed audio soundtrack data of people's daily conversation, built MLP, CNN and LSTM models to classify speakers' emotions, and analyzed the classification performance of each model.

- **Mobile Robots SLAM and Map Exploration in Unknown Environments**

Developed a map exploration algorithm for mobile robots in unknown environments, optimized the exploration performance by maximizing a designed reward function, and implemented the algorithm in simulations on ROS.

- **Control of UR3 Robotic Arm for Chess Gaming on ROS**

Worked as a team for a mobile robot project, developed an autonomous driving system using a PID controller to maintain a mobile robot within a defined driveway and avoid obstacles.

- **Mobile Robot Project**

Worked in a team for a mobile robot project, developed an autonomous driving system using a PID controller for maintaining the robot within the driveway and avoiding obstacles, using the perception information from other modules.

SKILLS

- **Knowledge:** Autonomous Robotic, Motion Planning, SLAM, Learning-Based Control, Model Predictive Control, Robust Control, Machine Learning, Deep Learning, Convex Optimization, Bayesian Optimization, etc.
- **Programming Languages:** C/C++, Python, MATLAB, HTML/CSS.
- **Tools:** Git, L^AT_EX, Linux, ROS, PyTorch, Pandas, Scipy, sklearn.

SCHOLARSHIPS AND AWARDS

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| • PROMOS DAAD Scholarship | 2022 |
| • Erasmus Exchange Grant | 2021 |
| • Tomsk Polytechnic University Scholarship for Excellent Performance (full GPA) | 2017 |
| • China Scholarship Council Scholarship | 2016 |
| • National Encouragement Scholarship (GPA in Top 5%) | 2015 |

VOLUNTEER EXPERIENCE

TelcoDR Inc.	Barcelona, Spain
Robot Expert Volunteer in MWC2021	07/2021-07/2021
Guangzhou Youth Science and Technology Museum	Guangzhou, China
Museum Guide Volunteer	06/2019-07/2019

ADDITIONAL

- **Languages:** Chinese (mother tongue), English (fluent), Russian (intermediate), German (basic), French (basic).
- **Hobbies:** Psychology, Fitness, Guitar, Photography, Photo/Video Edition.