

Yang Wang

Learning-based Control, Machine Learning, Optimization, Robotics

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EDUCATION

Technical University of Kaiserslautern Master of Science in Electrical and Computer Engineering, GPA: 3.6/4.0	Kaiserslautern, Germany 10/2019–03/2022
Swiss Federal Institute of Technology in Lausanne Visiting Student for Master's Thesis at Automatic Control Laboratory, Grade: 4.0/4.0	Lausanne, Switzerland 10/2021–03/2022
Polytechnic University of Catalonia Erasmus Exchange Student in Automatic Control and Robotics	Barcelona, Spain 03/2021–07/2021
Tomsk Polytechnic University (Double Degree) Bachelor of Science in Automation, GPA: 3.74/4.00	Tomsk, Russia 08/2016–06/2018
Shenyang Ligong University (Double Degree) Bachelor of Science in Automation, GPA: 90/100, Top 3%	Shenyang, China 09/2014–07/2016

RESEARCH EXPERIENCES

Master's Thesis Automatic Control Laboratory, Swiss Federal Institute of Technology in Lausanne	Lausanne, Switzerland 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.	
Research Assistant SmartFactory-KL, German Research Center for Artificial Intelligence	Kaiserslautern, Germany 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.	
Research Seminar Chair of Automation and Control, Technical University of Kaiserslautern	Kaiserslautern, Germany 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. High School STEM Teacher	Guangzhou, China 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**

Developed a UR3 robotic arm control system for playing chess games, including a sensing module using a depth camera, a motion planning and collision check module, and communication and action execution modules.

- **Mobile Robot Project**

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

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).