(Tim) Kaiyuan Xu – Résumé

Address	Building 13, Room 228, Tsinghua University, Beijing, 100084 China	**Date of Birth**	2^{nd} July, 1994
		Mobile Phone	+86 156 5277 3810
		Email	xky16@mails.tsinghua.edu.cn
Nationality	Chinese	**Homepage**	https://yzxky.github.io

Personal Profile

I am a master candidate in Center For Intelligent and Networked Systems(CFINS), Tsinghua University. My current adviser is (Samuel)Qing-Shan Jia. My research interest is developing optimization-based control theory and methodology for complex systems such as robotic systems and biological systems. I am interested in combining control and optimization with biological systems, understanding the mechanisms behind and making full use of them to help design methods (control, optimization) and devices(nanobots, sensors) that ultimately contribute to medical care.

Education

2016 - M. S. in Automation - Tsinghua University
2012 - 2016 B. S. in Automation - Tsinghua University

Experience

Research Experience

Dec. 2016 - Present Simulation-based optimization in DNA self-assembly
Instructed by Prof. (Samuel)Qing-Shan Jia, cooperated with Prof. Bryan Wei's group

Trying to understand the mechanism and match the experiment results with simulated ones by building and running simulations of the self-assembling process of DNA origami. Giving instructions on sequence designs that improve yields or generate specific structures by performing simulation-based optimization.

Aug. 2016 - Aug. 2017 Design of Diamond Ring Resonator by Ordinal Optimization
Instructed by Prof. (Samuel)Qing-Shan Jia, cooperated with Prof. Re-Bing Wu

Providing an ordinal-optimization-based method for designing shape parameters of the diamond ring resonator that optimizes the mode wavelength and quality factor, reducing the computational cost by an order of magnitude.
Publication: Xu K, Wu R B, Jia Q S. Design of diamond ring resonator by ordinal optimization[C]//Chinese Automation Congress (CAC), 2017. IEEE, 2017: 4159-4164.

Jan. 2016 - Jul. 2016 Closed-loop Control for Passive Dynamic Walking Based on Neural Network
Graduation Design, instructed by Prof. Mingguo Zhao

Predicting the chaos and bifurcation in passive dynamic walking by forward neural network, exerting control based on the prediction to stabilize the system. Achieving a comparable control effect to traditional chaos control method(OGY method) and a higher convergence rate.

Intern Experience

Jul. 2015 - Oct. 2015 Microsoft Research Asia (MSRA)
Internship in System Group, instructed by Lintao Zhang

Developing an unmanned vehicle based on ROS for home service which can perform SLAM, navigation and follow simple voice instructions. Designing a hierarchial software framework for robotics.

Project Experience

Oct. 2017 - Present Meituan's Autonomous Food Delivery System
Developer

An unmanned vehicle for accurate and rapid food delivery in rush hour, cooperated with Meituan Dianping.
Mainly responsible for Decision and Optimization part.

Sep. 2016 - Present Duckietown
Lead Developer in Tsinghua University

A robotics outreach and education effort originated from MIT, aiming at providing a low-cost education and research platform for self-driving and intelligent city, with all materials open. It has been chosen as a course project for undergraduate students in Tsinghua University since 2016.
Lead developer of Duckietown in THU and teaching assistant for the course project.

Jan. 2018 - May. 2018 AlchemyGod
Co-founder & Lead Developer

A macro-economic gamification powered by Blockchain, a simulation of supply chain in the form of Blockchain game, with a total trading volume of about 20 eths.
Core member of a 10-people team and lead Developer of backend development.

Aug. 2016 - Oct. 2016 AR-Based Building Management System
Team Leader

An intelligent building management system developed on Hololens, combing augmented reality with daily life. Entry for GIX Innovation Competition 2016.
Leader of a 3-person team and responsible for development of Hololens.

Sep. 2014 - Aug. 2015 Auto-balancing Bicycle
Core member

Modified from a hybrid electric bicycle, enabled to go forward, turn left and right flexibly at different velocities, providing a platform for unmanned bicycles. Entry for Virtual Instrument Contest 2016 and NI Engineering Impact Award 2016.
Mainly responsible for hardware design and live debugging.

Sep. 2014 - Jul. 2015 Soccer Robot Based on ROS for RoboCup2015
Team Leader

A soccer robot for RoboCup2015 Soccer Robot Humanoid league AdultSize Competition.
Leader of a 12-person team and technical leader of the Motion part

Nov. 2014 - Jan. 2015 Two-Wheel Self Balanced Vehicle Based on Myrio
Team Leader

Building a self-balanced vehicle based on Myrio which has the function of self-balancing, moving forward and backward and turning.
Leader of a 3-person team and responsible for control algorithm and filtering of the gyro.

Sep. 2013 - Jul. 2014 Autonomous Soccer Robot Control System Based on ROS
Lead Developer

Building an ROS-based autonomous robot software system consisting of Vision, Behavior, Motion Control and Simulation which was used in RoboCup2014, Brazil.
Lead developer of the Motion part.

Sep. 2013 - May. 2014 Programming Platform Based on C++ and Unity3D
Team Leader

Building a programming platform consisting of Logic, UI and network for the programming contest for freshmen in Department of Automation Engineering, Tsinghua University.
Leader of a 10-person team and technical leader of the Logic part.

Awards and Fellowships

Awards

2016 Finalist in NI Engineering Impact Award
Team member

2016 Grand Prize in Virtual Instrument Contest 2016
Team member

2016 Top 50 in GIX Innovation Competition 2016
Team member

2014 3^{rd} Place in RoboCup2014 Soccer Robot Humanoid league AdultSize Competition
Team member

2014 3^{rd} Place in RoboCup2014 Soccer Robot Humanoid league AdultSize Technical Challenge
Team member

Fellowships

2015 Tsinghua Fellowship for Academic Excellence
2014 Tsinghua Fellowship for Technology Innovation

Social Activities

Sep. 2018 - Present Teaching Assistant
Undergraduate Curriculum: Introduction to Information Science and Technology

Sep. 2017 - Feb. 2018 Teaching Assistant
Undergraduate Curriculum: Introduction to Information Science and Technology

Sep. 2016 - Feb. 2018 Teaching Assistant
Undergraduate Curriculum: Innovation on Robotics

Sep. 2016 - Feb. 2017 Teaching Assistant
Undergraduate Curriculum: Computer Networks and Applications

Sep. 2014 - Jul. 2015 Teaching Assistant
Undergraduate Curriculum: Interdisciplinary Research and Practice(RoboCup)

Sep. 2013 - Jul. 2014 Head
Network Section of Student Technology Association of Automation