Kui Xie

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EDUCATION

Imperial College London **Oct 2021 – Oct 2022**
MSc in Control and Optimization *London, United Kingdom*
- **GPA**: 82.5 / 100, ***Distinction (Expected)***

City, University of London **Sep 2019 – July 2021**
BEng in Electrical and Electronic Engineering (Avionics and Control) (Joint-Degree) *London, United Kingdom*
- **GPA**: 89.44 / 100 (*Ranked **Top 1%** among cohort*), ***First Degree with Honors***

Nanjing University of Aeronautics and Astronautics (NUAA) **Sep 2017 – July 2019**
BEng in Automation Engineering (Avionics and Control) (Joint-Degree) *Nanjing, China*
- **GPA**: 90.0 / 100 (*Ranked **Top 5%** among cohort*)
- **Awards:** Dean's List for Outstanding Academic Performance

RESEARCH EXPERIENCE

Dynamic Optimization in the Julia Programming Language **May 2022 – Sep 2022**
MSc individual research project in Imperial College London *London, United Kingdom*
- Solved dynamic optimization problem based on direct collocation methods in Julia to find optimal trajectory
- Minimized integrated residuals lower to 10^{-6} with mesh refinement methods, Minimax Error, Bisection, etc.
- Provided novel methods, warm start and early termination, reducing algorithm running time up to 40%.

City, University of London **Jul 2021 – Sep 2021**
Intern in Autonomous System Lab *London, United Kingdom*
- Built precise URDF model for the UAV with SolidWorks and Gazebo based on XML format language setting a solid foundation for further simulation in PC; Captured drone position data with Motion Capture Systems.
- Constructed and controlled quadrotor physically to fly steadily with PID algorithms based on Pixhawk.

Design, Modelling, Stability Analysis and Control of Hexacopter with a 2-DOF Arm **Jul 2020 – Jun 2021**
BEng individual research project in City, University of London *London, United Kingdom*
- Designed operational framework (CAD model) for drones flying through corridors with retractable brackets.
- Derived mathematical model and applied adaptive sliding mode controller to aerial manipulators, copying with system gravity centre slide and Inertia moment change successfully; Simulated whole dynamic system in MATLAB and Simulink, verifying the system stability and controller efficiency.

City, University of London **Jun 2020 – Sep 2020**
Intern in System and Control Research Centre *London, United Kingdom*
- Implemented nonlinear equations to approximate piecewise linear functions, lowering algorithm complexity; Resulting in maximum efficiency (5%) of the hydroelectric power plant based on an optimal operational framework for the hydroelectric power system.

LEADERSHIP EXPERIENCE & COMPETITIONS

The 6th China College Students' "Internet+" Innovation and Start-up Competition **Jun 2020 – Nov 2020**
Team Leader of Final Round Team (National Gold Award) *Nanjing, China*
- **Led team**'s efforts to mock the startup of a sonar sales company; Simulation results achieved **National Level Competition Gold Award** and demonstrated solid commercial feasibility based on reviewers' feedback.

The 14th National College Students "NXP" Cup Intelligent Car Competition **Oct 2018 – Aug 2019**
Team Leader of East China Winning Team *Nanjing, China*
- **Led a team** to design an intelligent three-wheeled vehicle controlled by PID algorithms, successfully making it two-wheeled upright and with long-term stability, awarded **Winning Prize in East China Region**.
- Designed printed-circuit boards of electromagnetic sensors by utilizing digital circuit analogue knowledge and lower signal noise generated from sensors by using Kalman filtering.

SKILLS, AWARDS & INTERESTS

Languages: Fluent in English; Proficient in Mandarin
Technical Skills: Julia / MATLAB / Simulink / C / Python / ROS
Interests: Chess; Hiking; Cooking
Awards: 2017-2018, 2018-2019 Outstanding Student Scholarship, Outstanding Academic Scholarship, NUAA