ZIXUAN FANG

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GOOGLE SCHOLAR

Skills

- Optimization
- Operations research
- UAV Surveillance Network
- UAV Delivery Network

EDUCATION

University of Sydney July.2025 – June.2029
Doctor of Philosophy: Optimization Methods on UAV Wireless Communication Applications *Sydney, Australia*

University of New South Wales Sept.2022 – Nov.2024
Master of Philosophy: Autonomous Navigation of UAV and Collision Avoidance *Sydney, Australia*

Macquarie University July. 2019 - July.2021
Bachelor of Engineering in Electrical Engineering (Hons) *Sydney, Australia*

PUBLICATIONS

[1] **Fang, Z.** & Savkin, A. Strategies for Optimized UAV Surveillance in Various Tasks and Scenarios: A Review. *Drones*. **8**, 193 (2024)

[2] **Fang, Z.** Optimized UAV Navigation Overcoming LoS Obstructions for Maximized Power Grid Tower Inspections in Mountainous Terrains*. *2023 IEEE International Conference On Robotics And Biomimetics (ROBIO)*. pp. 1-6 (2023)

[3] **Fang, Z.** Optimized Coverage Deployment Strategy for a Network of UAVs Monitoring a Disaster Area on an Uneven Terrain. *2024 16th International Conference On Computer And Automation Engineering (ICCAE)*. pp. 583-587 (2024)

[4] **Fang, Z.** & A.V., S. Optimized 3D Deployment of UAV Networks for QoS-Guaranteed Communication Coverage over Disaster Areas on Complex Terrains. *IEEE Wireless Communication Letter(under review)*

[5] **Fang, Z.**, Wei, J. & A.V., S. Navigation of a Team of Collaborating UAVs and UGVs for Bushfire Surveillance and People Evacuating on Uneven Mountainous Terrains.*Navigation,Guidance and Control(under review)*

[6] Li, S., **Fang, Z.**, Verma, S., Wei, J. & Savkin, A. Navigation and Deployment of Solar-Powered Unmanned Aerial Vehicles for Civilian Applications: A Comprehensive Review. *Drones*. **8**, 42 (2024)(Joint first authors)

[7] Wei, J. & **Fang, Z.** An optimal UAV and UGV Cooperative Network Navigation Algorithm for Bushfire Surveillance and Disaster Relief. *2024 16th International Conference On Computer And Automation Engineering (ICCAE)*. pp. 636-641 (2024)(Joint first authors)

[8] Wei, J., **Fang, Z.** & Li, S. A Method for UAV Collision-Free Path Planning in Forest Fire Rescue Missions over an Uneven Terrain. *2024 16th International Conference On Computer And Automation Engineering (ICCAE)*. pp. 599-604 (2024)(Joint first authors)

[9] Fang, Z. & Callegaro, L. Phase-shifted TAB converter system for electric VTOL aircraft. *IOP Conference Series: Earth And Environmental Science*. **804**, 032031 (2021)

RESEARCH EXPERIENCE

Research Student University of New South Wales
Supervisor: Prof. Andrey V.Savkin *Sydeny, Australia*

- Studied the current situation and future of UAV surveillance problems and analyzed with optimization theory.[1, 6]
- Modeling the problem of optimizing the deployment of UAV surveillance missions and using heuristic algorithms to solve multi-objective optimization problems. Achieved a 10-15% improvement in performance over existing algorithms[3, 4]

- Model the optimization problem of UAV path planning tasks and use a path planning algorithm to achieve optimal trajectory planning in instruction inspection and bushfire rescuing[2, 5, 7]

Bachelor Student Honour Thesis Macquarie University

Supervisor: Dr.Leonardo Callegaro and Dr.Mihai Ciobotaru *Sydney, Australia*

- Extensive research on the current state of electric aircraft research.
- An innovative multi-port converter model is proposed, realizes operation bidirectionally under 3 different operating conditions[9]

WORKING EXPERIENCE

Educatoinal Developer Nov. 2023 – Jan.2024

University of New South Wales *Sydney, Australia*

* Worked with Dr Peter Neal and the UNSW Nexus program team.
* Designed new calculus and linear algebra materials for undergraduate students.

Sessional Casual Academic Mac.2023 - Now

Macquarie Univeristy *Sydney, Australia*

* **ELEC3024 Control Systems**, Third Year and postgraduate students, 40 students.Teaching and marking in control theory and control system project design
* **ENGG1000 - Introduction to Engineering**, First Year Students, 70 students. Teaching and marking students in the "Software Logic Design" section.
* **ELEC2005 - Electronics and Electrical Systems**, Second Year Students, 45 students, Teaching and marking in electronics and electrical labs, tutorials and project design.

Sessional Casual Academic Sept.2024 - Now

Unviersity of New South Wales *Sydney, Australia*

* **ELEC4632 - Computer Control Systems**, Last Year and Postgraduate Students and Postgraduate Students, Teaching and marking in control theory and control system project design

Matlab Student Ambassordor May.2024 - Now

MathWorks *Sydney, Australia*

* Managing UNSW Matlab Group by sharing the latest Matlab and Simulink information, events and tips.
* Hosting 3 workshops for UNSW over 50 students using Matlab and Simulink