YANGYANG NING

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421 Docklands Drive, Docklands, VIC 3008, Australia

I. EDUCATION

1. The University of Melbourne, Melbourne School of Engineering *Melbourne, Australia* (2016.9 – 2019.7)

MSc, Electrical and Electronic Engineering, WAM: 73/100

- **Core subjects:** (WAM: 76/100)

Electronic Circuit Design，Digital System Design，Control Systems，Advanced Control Systems，Embedded System Design，Electronic System Implementation，Communication Systems，Signal Processing，Probability and Random Models，Signals and Systems

- **Capstone project：** Trajectory Tracking and Control of Quadrotor
  - ➢**Design Objective:** To achieve and simulate quadrotor time-optimal trajectory tracking and formation without violating geometrics and quadrotor dynamics constraints.
  - ➢**Key content:** Construct and simulate quadrotor non-linear model, Path tracking control techniques (PID+MPC), Time optimal trajectory generation (Minimum snap + obstacle avoidance), multiple drone formation
  - ➢**Achievement:** Complete the simulation of quadrotor model, PID controller design, and the basic trajectory design and formation of the aircraft have been realized

2. Ocean University of China, College of Engineering *Qingdao, China* (2012.9 – 2016.7)

BSc, Electrical and Electronic Engineering, WAM: 80/100

- **Core subjects:** (WAM: 88/100)

Programming with C Language，Principle and Interface Technique of Micro-computer，Fundamentals of Analog Electronics，Fundamentals of Digital Electronics，Data Structures，Principle and Application of Single-chip Computer，Principles and Applications of ARM，Control System Simulation，Fundamentals of Modern Control Theory，Signals & Systems

- **Graduation Project：** Design of Intelligent Tips Locators Based on Three-dimensional Linear Rail
  - ➢Design Objective：Design a tool to simplify tedious process caused by arranging the Tips into box in chemical/biological laboratory.
  - ➢Key content：Tips and boxes image processing; Stepping motor speed control, and Three-dimensional Linear Rail position control and trajectory control.
  - ➢Achievement：Complete the mechanical, hardware and software design, acquired "Excellent Graduation Design" (95/100)

II. AWARDS

1. Postgraduate stage

- Autonomous Robotics Competition, 1st, Melbourne University, 2017.8
- National Instruments Autonomous Robotics Competition (NI ARC), 11st, National Instruments, 2017.9

2. Undergraduate stage

- The First Qingdao Undergraduate Smart Car Competition, First prize of the electromagnetic group, Qingdao Science and Technology Association, 2014.6
- The 9th National Undergraduate “Freescale” Cup Smart Car Competition, the second prize of the Shandong Division Electromagnetic Group, Shandong Provincial Department of Education, 2014.8
- Technology Innovation Scholarship, Ocean University of China, No. 20140100102670, 2013-2014
- The Second Qingdao Undergraduate Smart Car Competition, First prize of the electromagnetic group, Qingdao Science and Technology Association, 2015.6
- University Innovation and Entrepreneurship Program: OUC_SRDP Project "University Restaurant Interactive Platform", Conclusion level: Excellent, Ocean University of China, 2014.6-2015.6

III. PROJECT EXPERIENCE

1. Postgraduate stage

- **Robotics competition - Team A team leader:** Leading the team participating in National Instruments Autonomous Robotics Competition 2017, Mainly responsible for Labview programming, Sensor testing and integration, mechanical structure design, ranked first in the Melbourne University level competition, and ranked 11th in the Sydney, 2017.3 – 2017.9
- **Robotics competition - Team A tutor:** Tutoring the team in National Instruments Autonomous Robotics Competition 2018, guiding team won the national second prize in the Sydney, 2018.3 – 2018.9
- **Advanced control simulation for human prostheses - Designer:** Realize the construction of the object model, complete the control simulation and discretization (PID control, state feedback control with integral action, output feedback control, optimal control), eliminate the specific interference by using the internal model principle, and use extreme seeking to achieve the optimal steady state control, 2018.7 – 2018.10
- **Game console design based on embedded system – Designer:** Complete PCB design and drawing, complete software game design,2017.7 – 2017.10
- **FPGA-based RPN calculator – Designer:** Using the Verilog language in the Quartus programming environment and ModelSim simulation environment, complete the processor design (implement basic assembly language logic + input and output), and complete the corresponding RPN calculator instruction set design, 2017.3 – 2017.6
- **Analog amplifier circuit design – Designer:** Analyze and use basic components (resistors, capacitors, diodes, BJT, MOSFET) to build and design analog amplifier circuits (differential circuits, current mirrors, negative feedback circuits)

2. Undergraduate stage

- **Freescale Smart Car Project - BOOM team leader:** Leading the team in The First Qingdao Undergraduate Smart Car Competition (Electromagnetic Double Car Project), mainly responsible for the programming of smart car control (PID control), mechanical structure design, and hardware design including circuit design (minimum system board, analog circuit, drive circuit) and PCB drawing, won the first prize, 2013.6 – 2014.6
- **Freescale Smart Car Project - Tutor:** Tutoring the team in the 10th National Undergraduate "Freescale" Cup Smart Car Competition, mainly responsible for PID control teaching, PCB drawing board teaching, amplifying circuit design teaching, technical report summary, guiding team won the national second prize, 2014.6 – 2015.6
- **University Innovation and Entrepreneurship Program - Project Leader:** Leading the team in University Innovation and Entrepreneurship Program: OUC_SRDP Project "University Restaurant Interactive Platform", mainly responsible for web page production, APP design, and obtained outstanding projects of the school, 2014.6 – 2015.6

IV. SKILLS AND CERTIFICATES

Software and applied project:

- **Matlab(proficient):** Control system simulation, function design and testing (Quadrotor model construction and flight control simulation) (human body prosthetic model simulation and control)
- **Altium designer(proficient):** PCB board drawing (smart car Minimum system board, driver board, signal processing circuit) (game board design)
- **C++(proficient):** Embedded application editing (smart car tracing control and algorithm) (game programming)
- **Verilog(proficient):** Digital Circuit Design (FPGA Calculator Processor Design)
- **LTspice(proficient):** Analog circuit design (amplifier circuit simulation)
- **Python(basic):** Aircraft host computer (flight control, multi-thread processing, flight path algorithm)
- **Java(basic):** Web and mobile application design

Language: Mandarin (fluent); Cantonese (skilled); English (IELTS 6.5)

Certificates: ①National Manufacturing Information Technology Project Visual C++ Development Engineer; ② National Manufacturing Information Technology Engineering Auto CAD Development Engineer

V. CAREER OBJECTIVES

Intented position: chip and device design, advanced automation technology, flight control system, control algorithm, hardware technology

VI. RESEARCH PROPOSAL