徐航

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教育经历

爱丁堡大学　硕士	**传感器与成像系统** (格拉斯哥大学联合培养)		2019 年 9 月 至今

• 加权成绩: 18.4/22 (预计获得荣誉学位)

伯明翰大学　本科(一等荣誉学位) **电气与电子工程**		2017 年 9 月 至 2019 年 7 月
华中科技大学 本科	**电气工程及其自动化**	2014 年 9 月 至 2017 年 7 月
北京四中		2011 年 9 月 至 2014 年 6 月

项目经历

传感与测量解决方案项目 - 项目领队　　　　　　　　　　　　　　2019 年 10 月 至 2020 年 2 月

• 研究运用多种现代传感技术探究复原兵马俑的建造方式，负责研究使用显微镜图像处理手法分析陶土表面纹理以确定其制造方法。 使用 MATLAB 仿真成功验证图像处理方案(Gabor 滤波器)可行性

伯明翰大学 2018 年度混合学科设计项目- 电气与电子工程师　　　　　2018 年 10 月 至 2019 年 3 月

• 探究关于 Formula Student 及 Shell Eco Marathon Series (大学生方程式比赛)的车辆设计及制造解决方案。 负责车辆控制器局域网(CAN)设计，使用 Simulink 车辆局域网工具包构建仿真模型验证团队设计可行性

计算机硬件及数字设计项目 (课程设计)　　　　　　　　　　　　　2018 年 10 月 至 2019 年 1 月

• 设计使用四层流水线的 RISC 处理器(核心部件)，通过 VHDL 编程在 Active-HDL 软件中实现仿真并使用重排序及流水线冒泡解决数据冒险，使用最少的时钟循环次数实现了给定算式的计算

机电一体化智能机器人项目 - 项目领队　　　　　　　　　　　　　2017 年 10 月 至 2018 年 4 月

• 运用电磁感应、嵌入式编程及变流器原理设计并组装交流信号寻线机器人，负责电磁信号感应系统及供电系统硬件的概念设计、三维建模、组件选购及寻线策略设计及 Arduino 程序编写，在年级计时赛中获得第一名

伯明翰大学 2017 年度混合学科设计项目 - 电气与电子工程师　　　　2017 年 10 月 至 2018 年 3 月

• 与机械工程师、建筑工程师(相关专业本科生)共同设计并仿真曼德拉海湾球场可开合屋顶，负责工业用电向直流驱动电机用电转化的概念设计、供电策略及控制系统的设计与 MATLAB 仿真

智能家居设备设计项目 (课程设计)　　　　　　　　　　　　　　　2017 年 10 月 至 2018 年 1 月

• 通过 SysML 系统建模语言设计可根据用户习惯自动开关及调温的智能恒温器概念原型并编写 Python 脚本实现用户界面和基本功能展示。在课程设计评分中获得专业最高分

研究经历

爱丁堡大学硕士生夏季研究项目　　　　　　　　　　　　　　　　2020 年 1 月 至 2020 年 9 月

• 运用 HTML 及 JavaScript 开发基于物理引擎的倒立摆系统在线实验室模型以实现 PID 控制和两足机器人平衡策略设计，旨在改善在线教学体验并减少实验室建设经费。该在线实验室项目将继续作为 Github 开源项目维护

伯明翰大学声学与声纳实验室 - 在读本科生研究机会实习生　　　　2018 年 6 月 至 2019 年 6 月

• 探究通过分析软件无线电数据探测地下金属线缆或管道分布的可行方案，设计运用相关系数计算的数据分析系统。项目运用 Linux 软件无线电相关软件(GNUradio)及硬件设备(SDRplay RSP2)应用程序接口编程。通过 Gold Code 编码解决对比数据的区分难题，大幅降低项目成本。该项目作为毕业设计获得荣誉学位

实习经历

北京市建筑设计研究院有限公司 - 弱电工程师实习生　　　　　　　　　　　　　　　2018 年 8 月

• 参与北京信息科技大学新校园项目，使用 AutoCAD 绘制门禁，安保，楼宇管理系统的弱电系统图

北京清能互联科技有限公司 - 暑期实习生　　　　　　　　　　　　　　　　　　　　2017 年 8 月

• 运用 Python 语言及相关库(E-chart)设计并编写拥有动态图形输出的电网反馈数据可视化系统，能够处理 800Mb 容量以上的数据文件，其图形界面基于 QT 平台

技能及其他

• 语言: 英语(雅思 7.5) • 编程语言: 熟练运用 C、Python、JavaScript、HTML、VHDL

• 熟练使用 MATLAB、NI Multisim、Xilinx ISE 仿真软件，熟练使用 Adobe Photoshop 及 Illustrator 设计软件

• 熟练运用 PIC 及 Arduino 编程及硬件设计，熟练使用 Blender 及 Solidworks 进行三维建模

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Education

University of Edinburgh,   [9/2019–present]
  MSc Sensor and Imaging Systems (jointly by the Universities of Glasgow)
University of Birmingham,   [9/2017–7/2019]
  First Class Honours, BEng Electronic and Electrical Engineering
Huazhong University of Science and Technology, P.R. China,   [9/2014–7/2017]
  BEng Electrical Engineering and Automation
Beijing No.4 High School, P.R. China   [9/2011–6/2014]

Engineering Projects

Group Leader - Sensing and Measurement Problem-Solving Project   [10/2019–2/2020]
- Led a team of four to investigate the possibility of using multiple modern sensing techniques to recover the construction method of the Terracotta Warriors.
- Investigated the method of image processing (Gabor filter) to distinguish the manufacturing method based on the clay pattern. And delivered a MATLAB simulation which validates the image processing method.

Electrical Engineer – 3rd Year Integrated Design Project   [10/2018–3/2019]
- Worked in a team of three groups of different engineering department that aim to solve the challenge about the design and manufacture of packages for high speed and high efficiency vehicles targeted at the Formula Student and Shell Eco Marathon Series.
- Did research about the vehicle Controller Area Network (CAN bus) which contributed to the origination of the concept design of the Electrical group. And delivered a Simulink model using the Vehicle Network Toolbox package, which gives solutions to simulations of all the CAN bus designs and finally successfully proves the system design.

Computer Hardware and Digital Design Project (Individual Project)   [10/2018–1/2019]
- Designed the core part of a RISC (Reduced Instruction Set Computer) microprocessor with a four-stage pipeline and demonstrate it working in VHDL environment (Active-HDL).
- Developed the software strategy to overcome the data hazard problem, which uses the minimum clock cycles to calculate the given equation.

Project Team Leader - 2nd Year Integrated Mechatronic Project   [10/2017–4/2018]
- Led a team of six to design, build, demonstrate and document an autonomous current signal following robot that will elegantly follow a hidden course using coil sensors.
- Developed the navigation strategy, signal processing strategy and power supply strategy.
- Designed the filtering and noise reduction circuit, which was decisive to the team's final victory.
- Reprogrammed Arduino's Atmega328 chip's API on the hardware level, which allowed a faster sampling frequency and boosts signal demodulation significantly.
- Built Solidworks models for modular coil sensor holders with holder bases, which allows adjustments in sensor's position.
- Won first place as one of the only two groups whose robot followed the course correctly.

Electrical Engineer – 2nd Year Integrated Design Project   [10/2017–3/2018]
- Worked in a team of seven including civil and mechanical engineering students to design a retractable roof for the Nelson Mandela Bay Stadium in South Africa, built with trusses and a PVC membrane driven by motors.
- Designed a battery power processing system which supports DC servo motors and can be charged with either power grid or solar power.
- Built a Simulink model of the autonomous charging process and 3D models of the power processing units and the battery pack units.
- Won the final ARUP prize.

Smart Home Device Design Project (Individual Project) [10/2017-1/2018]
- Designed a smart thermostat which could auto adjust the temperature according to users' habits and auto switch off when users leave.
- Demonstrated a set of SysML diagrams including Requirements diagram, Block diagram and Activity Diagram to support the design. And Delivered a Python script to analogue the operation of the thermostat including a user interface and a smart control system.
- Obtained full mark in SysML and Python assessments, got the highest mark in the department.

Research Experience

Postgraduate Researcher - MSc Summer Project, [1/2020-9/2020]
Supervised by Tim Drysdale, University of Edinburgh
- Developed an online laboratory model of inverted pendulum systems integrated with the physics engine (Bullet Engine) aiming to ameliorate online teaching experience and reduce the amount of laboratory capital investigation.
- Developed proficiency with Blender 3D creation and acquired experience in PID control design and robot biped locomotion system balancing.
- Gained skills in JavaScript and HTML development with Physics engine library API usage.
- Continued as an opensource project on Github.

Undergraduate Researcher - Acoustics and Sonar Group, [6/2018-6/2019]
Supervised by Phil Atkins, University of Birmingham
- Investigated the possibility of improving the accuracy of underground conductor detecting and reducing the expense using a monopole system with Software Defined Radio devices.
- Developed proficiency with MATLAB and acquired experience in applying mathematical techniques to process radio signal.
- Gained skills of C programming in a Linux environment and developed a program for SDR devices controlling with provided API.
- Started as a summer research program and continued as a bachelor final year project, which awards the honour degree.

Employment Experience

ELV Engineer Intern - Beijing Institute of Architectural Design, P.R. China [8/2018]
- Obtained AutoCAD drawing skills and learnt to produce Extra Low Voltage (ELV) system diagrams.
- Participated in the project of new campus design for Beijing Information Science and Technology University, established ELV system diagrams for Access Control Systems, Security, Building Management Systems.

Programmer Intern - Tsintergy Technology, P.R.China [8/2017]
- Developed a competitive bidding decision analysis application which could go through all possible bidding situations of electric power generation projects.
- Developed a power grid feedback visualization application which obtained the data to judge if the power grid works correctly and pointed out the error points by an output chart.

Extra-curricular Activities

Technical Director of the Powertrain Team - UBeRACING, UoB [2018-2019]
- Responsible for motor relevant laboratory testing and optimisation with a high voltage controller.
- Supported calculations and documents for components selection and parameters decision.

Skills & Abilities

- Advanced proficiency in C, Python, JavaScript, HTML, MATLAB, VHDL, SysML, PIC programming
- Competent in use of Solidworks, NI Multisim, Blender, Adobe Photoshop & Illustrator
- Intermediate proficiency in Lua, Xilinx ISE Design Suite, AutoCAD, Linux Website server