Jiajun Hu

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I am now a Final Year undergraduate student at University of Nottingham, China Campus, a Sino-Foreign University in British Education System and carries English as official instruction and working language. I am conducting my final graduation project and thesis under the supervision of Prof. Bai Shun in prospect of Audio signal Processing and Machine Learning.

EDUCATION

University of Nottingham, Ningbo, China Sep.2017-Jul.2020
B.Sc. in Electrical & Electronic Engineering (with Honors)
B.Sc. Thesis Supervisors: Shun Bai
B.Sc. Academic Tutor: David Cho

Grades / GPA:

70/100	3.57/4.00	2017/18
69/100	3.61/4.00	2018/19
73/100	3.83/4.00	2019/20

Academic Knowledge

Mathematics: Foundation Algebra Calculus, Statistic Scientific Method, Signal System and System, Advanced Engineering Mathematics

Electrical Engineering: Electrical & Magnetic Circuits Analysis, Power Conditioning Control, Electricity Transmission, Advanced Power Electronics

Electronic Engineering: Information System: Basic Semiconductor Devices, Electronic Communication Processing, Analogue Electronics, Integrated Circuit Design and Manufacture

Computer Programming: MATLAB, C/C++, Python, JavaScript

PROJECT AND LAB EXPERIENCE

DJI RoboMaster UNNC Visual Computing Group Member Aug.2019-present
- Design Object Detection and Auto Aiming Function using OpenCV in C++
- Develop Serial Communication Port and Protocol to interact with Electronic Embedded System

Auto-Navigating Vehicle Project Sep.2018- Jun.2019
- Design Auto colored-path Navigation Function in C/C++ using Respberry Pi and Arduino
- Design Object Detection and Speed Amendment with Integrated Light density and IR sensors

Doppler Effect Radar Module Design and Implementation Sep.2019- Jun.2020
- Processing transmitted Microwave signal frequency to track speed of a moving object in STM32L
- Programing an assembled FPGA by Verilog to display digits as receiver and computing module
- Applying self-designed filter and linear regulator for stabilization and noise reduction

Blockchain Insurance Application (supervised by Prof. David Cho) Jul.2019- Aug.2019
- Designing a web front with node.js and web3.js to interact with smart contract in Ethereum (ETH)
- Applying Auto-pricing Model based Driver-behavior Vehicle Insurance for risk segmentation

Forward Convertor Conditioning and Control Sep.2019- Jun.2020
- Designing and implementing an AC-DC forward convertor to achieve power transmission with a self-designed PCB
- Designing and applying advanced controller strategy for output power stabilization with a given PCB board

Speech Diarization and Noise cancellation (supervised by Prof. Shun Bai) Jun.2020- present
- Filtering noisy speech signal using Python and related packages (SciPy, NumPy)
- Using GMM-HMM Machine Learning model for speaker classification in Cloud Sever
- Apply High-Level-Synthesis and C/C++ interaction in FPGA for hardware Machine Learning acceleration

CORE MODULEs

Mathematic Modules:

2017-18 Foundation Algebra 75/100 Foundation Calculus 89/100 Scientific Method 77/100 : provide fundamental algebra, calculus and statistic techniques and tools for higher engineering perspective application.
2018-19 Engineering Analysis 64/100: previous learned techniques application in circuit analysis, involving preliminary introduction to matrix operation
2019-20 Modelling: Method & Tools 74/100: **First semester** advanced signal and system analysis techniques including Fourier Transform, Laplace Transform, Z-Transform. **Second semester** Numerical methods, Multi-variables mathematic techniques, Multi-Coordinator system transform and Differential equations.
2020-21 Advanced Engineering Mathematics (in progress now): Apply all pre-learned techniques to process signals in computer using MATLAB, involving advanced Linear Algebra, Complex Function and Matrix transform

CORE MODULES

Electrical Module:

2018-19 Power and Energy 64/100: Provide fundamental circuits analysis concepts and theories, and dive into deeper power and energy world, including three-phase power system, electrical machine operation, transformer analysis, High-Voltage energy distribution and delivery and basic renewable energy theories (mostly wind energy and tidal energy).
2019-2020 Electrical Energy Conditioning and Control 81/100: An advanced version of pre-learned module. **First Semester:** introduction to power electronics theories including forward, fly-back, boost convertor operation and design, which is implemented and instructed in Lab projects simultaneously. **Second Semester:** further investigation and study of Electrical Machine and Renewable Energy Technology including Electromagnetic theories, rotating systems, control theories. The control theory is applied in Lab projects to maintain stable output of the convertor designed in first semester.

Electronic Module:

2018-19 Information and System 79/100: Introduction to electronic and information concepts and theories, including semiconductor devices operation (transistor, operational amplifier), analogue and digital filters, analogue to digital conversion (ADC, sampling theories, Fourier Analysis).
2019-2020 Electronic Processing and Communication 70/100: An advanced and fine sorted version of pre-learned module. **First Semester**: analogue and digital components operations (comparator, AD-DA convertor, oscillator, filters and transistor), memory circuits in modern memory storage device (SSD, DDR). **Second Semester:** Introduction to modern communication engineering, including Analogue Communication(Frequency Modulation, Amplitude Modulation and Radio Frequency) and digital communication (Shift Keying modulation, Noise and error reduction and Sampling theory with matched filter)

ABILITY

Solid Academic English Abilities 2020/9/30
- IELTS Test: Listening 7.5 Reading 8 Speaking 6 Writing 6 Overall Band 7

Mathematic Tools
- Linear Algebra - Calculus - ODEs & PDEs -Vector Calculus - Signal Transform (Laplace, Fourier, Z- Transform) - Matrices

Electrical Engineering
-Semiconductor Devices Operation (BJT, MOSFET) - Control Theories (forward/closed/open Loop Control)
-Power Electronics (Regulator, Convertor) - Electrical Machine

Electronic Engineering
- Raspberry Pi -Arduino -FPGA (High-Level-Synthesis)

Computer Engineering
- Python Programming (Scipy, Numpy, Pytorch) -C/C++ (Vivado HLS, OpenCV image processing)