Naichuan Luo

APPLIACNT INFORMATION

First name: Naichuan
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Gender: Male
Date of Brith: 24/10/2001
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UNIVERSITY EDUCATION

Universities' Name: City University of Hong Kong
Type of Degree: Master of Science
Name of Degree: Master of Science in Electronic Information Engineering
Degree Start Date: 08/2022
Degree Received Date: 01/06/2023

Universities' Name: Shandong University
Type of Degree: Bachelor of Engineering
Name of Degree: Bachelor of Engineering in Integrated Circuit Design and Integrated Systems
Degree Start Date: 09/2018
Degree Received Date: 18/06/2022

RESEARCH INTERESTS / RESEARCH PROFILE

My previous recognized research experiences made me interested in research fields like machine learning, antenna design and control, wireless communication, computer vision, computer graphics, and photonics.

My experiences also make me competent in dealing with jobs like FPGA design on Quartus with Verilog language, small-scale integrated circuit design with cadence on Linux, analyzing photonic systems with ANSYS Lumerical, designing antenna with ANSYS HFSS, using glut library of C to create animation, using python's scraper library to create crawler software, using C and python to build basic internet oriented applications, using MATLAB for antenna simulation or control system design as well as using Tensorflow and Pytorch for machine learning.

I am quite interested in any of my research directions for now, but I believe that my potential research interests are far more than that.

RESEARCH EXPERIENCE

Position/Role title: Group leader
Supervisor/Laboratory: Jihui Fan
University/College/Other Organization: Shandong University

Start Date: 2021 fall
End Date: 2024 winter
Time commitment: about 2 years, averagely 5 hours per week.
Brief description of work done: Optimizing Nonintrusive Load Monitoring algorithms, firstly tried FHMM and graph signal process, later tried CNN, and finally tried Attention-based CNN. Other small changes are also applied to the general structure: generated optimized data training, differential inputs, multi-head structure, and self-interference cancellation (proposed method, but temporarily fails). The work was first using Tensorflow (python) and turned into Pytorch (python) later on.

Position/Role title: Group leader
Supervisor/Laboratory: Cheng Wang
University/College/Other Organization: City University of Hong Kong
Start Date: 2023 spring
End Date: 2023 spring
Time commitment: 4 weeks, about 8 hours per week
Brief description of work done: Reproduce a paper' content on ultra-compact low-crosstalk sinusoidal silicon waveguide on ANSYS Lumerical, write a paper analyzing the modal effect of this design and try to design such a system for 1310nm laser systems instead of 1550nm laser systems.

Position/Role title: Individual
Supervisor/Laboratory: Kelvin S Y Yuen
University/College/Other Organization: City University of Hong Kong
Start Date: 2023 spring
End Date: 2023 spring
Time commitment: 2 weeks, about 10 hours per week
Brief description of work done: Build a 3-dimensional movie based on the glut library of C.

Position/Role title: Group leader
Supervisor/Laboratory: Steve H Wong
University/College/Other Organization: City University of Hong Kong
Start Date: 2023 spring
End Date: 2023 spring
Time commitment: 4 weeks, 10 hours per week
Brief description of work done: Design, fabrication and measurement of a dual-band microstrip patch antenna given required band frequency, bandwidth, gain and half power beam width using ANSYS HFSS.

Position/Role title: Individual
Supervisor/Laboratory: K M Luk
University/College/Other Organization: City University of Hong Kong
Start Date: 2022 fall
End Date: 2022 fall
Time commitment: 2 weeks, 10 hours per week
Brief description of work done: Design and fabricate a dual-band microstrip patch antenna given the required band frequency using ANSYS HFSS.

Position/Role title: Group member
Supervisor/Laboratory: Lin Dai

University/College/Other Organization: City University of Hong Kong
Start Date: 2022 fall
End Date: 2022 fall
Time commitment: about 2 weeks, 15 hours per week
Brief description of work done: Write an academic review paper on Orbital Angular Momentum for wireless communication and do an in-class presentation.

Position/Role title: Individual
Supervisor/Laboratory: Guanrong Chen
University/College/Other Organization: City University of Hong Kong
Start Date: 2022 fall
End Date: 2022 fall
Time commitment: about 5 weeks, 8 hours per week
Brief description of work done: Write five academic review papers on multiple access and random access methods, cellular communication networks, equalization in wireless communication, antenna technologies and wireless communication and coding for wireless channels respectively.

Position/Role title: Group leader
Supervisor/Laboratory: Haoliang Li
University/College/Other Organization: City University of Hong Kong
Start Date: 2022 fall
End Date: 2022 fall
Time commitment: about 2 weeks, 8 hours per week
Brief description of work done: Reproduce a paper's content which is about a lightweight face recognition model and write a paper on testing this model on real people with different light conditions and facial expressions and angle.

Position/Role title: Group leader
University/College/Other Organization: Shandong University
Start Date: 2021 summer
End Date: 2021 summer
Time commitment: 5 weeks, about 10 hours per week
Brief description of work done: Design an algorithm with MATLAB that controls a 12-element phased array antenna to have sufficient transmitted power over 3 random points with as little power as possible.

Position/Role title: team member
Supervisor/Laboratory: EDA laboratory
University/College/Other Organization: Shandong University
Start Date: 2021 fall
End Date: 2021 fall
Time commitment: 3 weeks, about 5 hours per week
Brief description of work done: Reproduce an FPGA based neural network for electrocardiogram recognition based on an existing CNN structure and parameters.

Position/Role title: Group leader
Supervisor/Laboratory: EDA laboratory
University/College/Other Organization: Shandong University
Start Date: 2021 fall
End Date: 2021 fall

Time commitment: 3 weeks, about 20 hours per week
Brief description of work done: Design a 128-bit random access memory with cadence.

Position/Role title: Individual
Supervisor/Laboratory: EDA laboratory
University/College/Other Organization: Shandong University
Start Date: 2020 fall
End Date: 2020 fall
Time commitment: 2 weeks, about 5 hours per week
Brief description of work done: Build a traffic light displaying countdown and smart control according to motorists and pedestrian recognition with FPGA on Quartus with Verilog language.

Position/Role title: Group leader
Supervisor/Laboratory: Xueli Li
University/College/Other Organization: Shandong University
Start Date: 2020 fall
End Date: 2020 winter
Time commitment: 2 weeks, about 15 hours per week
Brief description of work done: Design an audio digital compressing and corresponding decompressing system with LabView. The compressing methods contain time domain down-sampling, MP3, and WCLMS lossless coder and an in-class presentation.

RESEARCH AWARDS/SCHOLARSHIPS

Title of awards: Excellent graduation thesis of the college
Source of awards: Shandong University
Amount: None
Term: 2021-2022