

Cheng Jin

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Education Background

University of Electronic Science and Technology of China (UESTC)

08/2018-07/2022

Bachelor of Engineering in Optoelectronic Information Science and Engineering

Overall GPA: 3.84/4.0 TOEFL: 102 GRE: 322+3.5

Awards & Honors :

Scholarship for Outstanding Student (Percentage: 15.5%), 12/2019

International House at UC Berkeley

01-02/2019

Leadership and Innovation Program (on campus, with certificate, no transcript)

Publication Information

- C. Jin, L. -J. Deng, T. -Z. Huang, and G. Vivone. Laplacian Pyramid Networks: A New Approach for Multispectral Pansharpening. Submitted to *Information Fusion* (minor revision, impact factor: 12.975)
- Z. -R. Jin, T -J. Zhang, C. Jin, and L. -J. Deng. Weighted Shallow-deep Feature Fusion Network for Pansharpening. *IGARSS 2021-2021 IEEE International Geoscience and Remote Sensing Symposium*, 2021.
- S. -S. Xiao, C. Jin, T -J. Zhang, R. Ran, and L. -J. Deng. Progressive Band-separated Convolutional Neural Network for Multispectral Pansharpening. *IGARSS 2021-2021 IEEE International Geoscience and Remote Sensing Symposium*, 2021.
- L. -J. Deng, G. Vivone, C. Jin and J. Chanussot. Detail Injection-Based Deep Convolutional Neural Networks for Pansharpening. *IEEE Transactions on Geoscience and Remote Sensing*, doi: 10.1109/TGRS.2020.3031366.
- YU Shiwei, JIN Cheng. Torpedo Tracing of Warship Escaping Along a Linear Direction. *Studies in College Mathematics*. 2019, 5.

Professional Skills

Python (2yrs), C (1.5yrs), LaTeX (3yrs), MATLAB (2yrs), Linux (1.5yrs), Academic article writing

Certificates: Chinese Amateur Radio Operation License, Chinese Red Cross First Aider Certificate

Internship in the Machine Learning area

Mitacs & Computational Medicine Laboratory, Western University (online program, Canada)

07-10/2021

Will be responsible for assessment of perfusion heterogeneity in human CT data using PM3 platforms, and machine learning of segmentation

Research Experiences

Fusion of Satellite Panchromatic Image and Multispectral Image Based on Deep Learning

04/2019-now

Laplacian Pyramid Networks: A New Approach for Multispectral Pansharpening / Major Participant

10/2019-now

- Designed an end-to-end deep neural network structure: Laplacian Pyramid Networks based on the inspiration from the multi-scale spatial representation structure of the Laplacian Pyramid Decomposition (LPD)
- Used the Module Transfer Function (MTF) to describe the feature of each band of the multi-spectral image for image fusion
- Extensive experimental results based on quantitative and qualitative assessments exploiting benchmarking datasets demonstrate that the proposed architecture outperforms other seven state-of-the-art pansharpening methods (four are conventional methods, three are deep-learning based methods) in quality indexes SAM, ERGAS, SCC, Q2ⁿ and Qavg.

Weighted Shallow-deep Feature Fusion Network for Pansharpening / Participant

12/2020-02/2021

- Assisted in proposing Adaptive Skip Weighter (ASW) to perform dynamic feature graph overlay for image fusion, which helped improve limitations of ResNet

Progressive Band-separated Convolutional Neural Network for Multispectral Pansharpening / Participant

12/2020-02/2021

- Assisted in drawing schematic diagrams of the proposed method, which promoted uneven optimization results of each band in traditional methods (given the specificity of each band) by creating optimization functions for different bands to perform image fusion

- Reconstructed DiCNN-1 and DiCNN-2 according to the paper Pansharpening via Detail Injection Based Convolutional Neural Networks
- Conducted image fusion benchmark test for DiCNN-1, DiCNN-2, and PanNet, and compared the results with those of CS-Net, MRA-Net, and Fusion-Net
- Programmed algorithms (DiCNN-1, DiCNN-2, and PanNet) under the framework of TensorFlow using Python

Brain-like Computational Simulation Based on Two-dimensional Materials | Participant for software part 12/2019-12/2020

- Used PyQt5 to program the front-end Graphical User Interface (GUI) that allowed users to select suitable two-dimensional materials for their subsequent simulation work
- Assisted in 1. Carried out curve fitting to get the basic electrical characteristic parameters of the materials using Origin based on the electrical conditions of the materials provided by the hardware/material group; 2. Programmed to recognize handwritten digital image dataset (MNIST) by treating these electrical inputs/outputs as neuron nodes in a neural network

Torpedo Tracing of Warship Escaping Along a Linear Direction | Major Participant

12/2018-03/2019

- Built the corresponding differential equation for a random linear trajectory that a warship escapes along
- Solved the differential equation and obtained the analytic solution of the torpedo tracing trajectory, by Transformed the scene into one that the enemy ship flees in the vertical direction of our ship's coordinate axis using the coordinates rotation

Commission of Trust

Reviewer for:

- *IEEE Transactions on Geoscience and Remote Sensing*
- *IEEE Geoscience and Remote Sensing Letters*
- *International Journal of Computer Vision*

Professional Contests

National University Students' Opt-Sci-Tech Competition (in progress)	08/2021
1 st Prize at the provincial level in CUMCM (Contemporary Undergraduate Mathematical Contest in Modeling)	11/2020
3 rd Prize in the 20th Mathematical Contest in Modeling of UESTC	06/2020
Successful Participant in the Mathematical Contest in Modeling	04/2020

Projects

Smartphone-based analysis of non-destructive apple brix measurement | Participant (in progress) 08/2021

- Assisted in obtaining apple reflection spectrum by designing the optical path in external detector as an accessory
- Used Android Studio to program an Android application for mobile use in displaying apple reflection spectrum measurements and predicted apple brix results
- Integrated a 3-layered convolutional neural network with the Android application mentioned above to predict the brix value of the spectrum-measured apple
- Used Autodesk Inventor to design 3D external schematic diagram of spectrum detector, followed by 3D printing to obtain the physical object

Visualization of Abstract Concepts in Solid and Semiconductor Physics | Participant

12/2020

- Assisted in the visualization work of 1. one-dimensional monoatomic lattice vibration, 2. 1st& 2nd Brillouin regions of bode-centered/face-centered/simple cubic crystals, 3. macroscopic operation of crystals via Autodesk 3DS MAX and Adobe After Effects
- Responsible for the presentation video editing work

Segmenting and extracting the contour images of blood cells under the microscope | Independent Study

11/2020

- Used Wavelet transform for image denoising, Histogram averaging to increase image contrast, the OTSU threshold method to binarize the images
- Used the expansion and etching methods in image morphology processing to fill/remove the invalid area, obtained contour image of blood cells after segmentation and extraction

- Wrote the logical expression for the functions of the controller, timer, state display, control object, alarm circuit, and other modules
- Simplified the logical expression using Karnaugh Map, selected the chips for application in Multisim, and drew the basic circuit schematic diagram
- Programmed and simulated it using Vivado

Selected Extracurricular Activities

Applied Electronic Science and Technology Association, UESTC

10/2018-now

- Responsible for handling professional questions, such as the operation of Linux system, network configuration, programming
- Served as the keynote speaker of the annual recruitment lecture

"Bee's Home" Volunteer Teaching Team, College of Optoelectronic Science and Engineering, UESTC

07/2019-04/2021

- Responsible for operation of WeChat official account and participated in volunteer teaching work (reported by local TV)
- Awarded "Outstanding Volunteer" (twice), "Excellent Individual in Social Practice" (once)