

Shuang Ni

+1 (514)549-0276 | shuang.ni@mail.concordia.ca

EDUCATION

- Concordia University**, Montreal, Canada 01/2019 - present
- M.Sc. in Electrical and Computer Engineering (GPA: 4.30 /4.30)
 - Anticipated Graduation Date: April 2021
- University of Manitoba**, Winnipeg, Canada 09/2017 - 12/2018
- M.Sc. in Electrical and Computer Engineering (GPA: 4.13 /4.50)
- University of Electronic Science and Technology of China**, Chengdu, China 09/2013 - 07/2017
- Bachelor of Electronic Information Engineering (GPA: 3.47/4.00)

SKILLS

- **Programming:** Python, C, C++, R, TensorFlow, Scikit-learn, MPI, OpenMP, OpenCL, OpenCV.
- **Tools:** MATLAB, Mathematica, Linux, GitHub.

RESEARCH EXPERIENCE

Muscle Oxygen Saturation Quantitative Measurement and Fault Diagnostic 09/2017 - 12/2020
Master's Thesis

- Developed a methodology to non-invasively and quantitatively measure muscle oxygen saturation (SmO_2) using 5-wavelength diffuse reflectance continuous-wave near-infrared spectroscopy (NIRS).
- Applied non-linear least squares fitting of 5-wavelength measured attenuation spectrum to a Taylor expansion attenuation model and then obtained the SmO_2 value of calf muscles under different workout status.
- Proposed a fault diagnostic method by implementing SVM with RBF kernel in Scikit-learn to classify labeled attenuation spectrum datasets and to predict reliability of collected data.
- Developed an application to calculate SmO_2 and fault diagnostic using MATLAB App Designer.

Deep Learning Mechanism of Revenue Maximization in Mobile Edge Computing 09/2019 - 04/2020

- Designed a revenue maximization incentive mechanism with deep learning techniques.
- Developed two customized neural network models using TensorFlow to maximize the revenue for cooperative task offloading in a mobile edge computing system.
- Developed a Lagrangian function as loss function to solve the maximum problem under three realistic constraints.

Parallel Approach of Fast Fourier Transform 09/2018 - 12/2018

- Designed two parallel approaches of decimation on time Fast Fourier Transform (DIT-FFT) using Message Passing Interface (MPI) and Open Multi-Processing (OpenMP).
- Developed serial and parallel DIT-FFT with MPI and OpenMP in C++.
- Analyzed the timing performance of for both MPI and OpenMP, decreasing comparison time by 70%.

Digital Image Geometric Analysis and Feature Comparison 01/2018 - 04/2018

- Generated Voronoi mesh and Delaunay mesh to digital images in Mathematica and found their Maximal Nucleus Clusters (MNCs) to extract the object of interest.
- Improved performance of object extraction by applying Chan-Verse method to isolate foreground and skeleton method to find the main outline of the image.
- Developed a methodology to compare similarities of images by analyzing their MNCs features.

Low-complexity Algorithm of Massive MIMO Detection

11/2016 - 07/2017

Research Assistant, University of Wollongong, NSW, Australia

- Analyzed performance and complexities of several linear and non-linear algorithms, including maximum likelihood, MMSE, lattice reduction, multi-branch structure and sphere coding.
- Built and simulated a new algorithm in massive MIMO detection by combining the multi-branch scheme, lattice reduction and successive interference cancellation, which is named MB-LR-SIC algorithm.
- Analyzed performance and complexity of the MB-LR-SIC algorithm

COURSE WORK

- Statistical Aspect of Machine Learning, Digital Image Processing, Parallel Processing, Advanced Signal Processing, Modelling and Analysis of Telecommunications Networks, Statistical Signal Analysis, Digital Signal Processing, Signals and Systems, Mathematical Methods in Electrical Engineering, C-Programming, Fundamentals of Software, Principles of the Computer System, Single Chip Principle and Application, Information Theory and Information Coding.

HONORS & AWARDS

- Concordia Split Merit Scholarship, 2019 & 2020
- International Graduate Student Entrance Scholarship of University of Manitoba, 2017
- Third-class Scholarship of UESTC, 2016
- Outstanding Volunteer of UESTC, 2014