

# Yinan Huang

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## Education

### Duke University

Durham, USA

*M.S. in Electrical and Computer Engineering (machine learning track)*

Sep.2020-present

- Relevant courses: Programming, data Structures and algorithms in C++, Intro to machine learning, Probabilistic machine learning, Computer vision, Signal detection and extraction
- GPA: 4.0/4.0

### Sun Yat-Sen University

China

*B.S. in Physics*

Sep. 2016-Jun.2020

- GPA: 4.2/5 (92/100), Class Rank: 1/83
- Scholarship: National scholarship, Coca Cola scholarship, Wong Lo Kat scholarship

## Internship

*Research intern, Lab for Ultracold Quantum Gases*

HKUST, HongKong

**SU(N) Gases Classification with Convolutional Neural Network**

July-Aug.2019

- Developed a CNN model to classify quantum gases images into SU(N) symmetry.
- Gave a physical explanation of the CNN and compared it with theory.

## Projects

### Image recovery based on compressive sensing

*A few samples used to reconstruct the original image*

- Random sample in spatial domain and use DCT coefficients to form underdetermined linear equations
- Orthogonal matching pursuit (stagewise regression) is used to solve a sparse sub-optimal solution under L0 regularization
- Original image is recovered from DCT coefficients.

### Brain computer signals recognition: left/right command classification

*Feature vector of magnetic field signal from human brain for command classifications*

- Developed solver of SVM based on interior point method (barrier method) with Newton's method
- Primal-dual interior method is proposed and implemented for speeding up

### Decision fusion: a Bayesian fusion algorithm with unknown detection probability

*A Bayesian fusion algorithm combined with prior knowledge of  $P_D > P_F$*

- Designed a Bayesian fusion algorithm which assumes detection probability is unknown but uniformly distributed over  $[P_F, 1]$ .
- We showed that Bayesian method outperforms conventional generalized likelihood ratio test in terms of ROC, AUC when the assumption holds.

## Extracurriculum

2018    Honorable Mention, Mathematical Contest in Modelling

2016-2020 Reading seminar, School of physics and astronomy, SYSU

## Computer skills

Python, C++, Matlab