

# Yufei Guo

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## EDUCATION

### Columbia University

New York, NY

*M.S. in Computer Science* (3.77/4.0)

Sep 2022 - Feb 2024

- Courses: Linear Optimization, Combinatorial Optimization, Randomized Algorithms, Machine Learning, Approximation Algorithms, Sublinear Algorithms

### University of Wisconsin-Madison

Madison, WI

*B.S. in Computer Science and Mathematics* (3.92/4.0)

Sep 2019 - May 2022

- Distinction in the Major, Dean's List
- Courses: Data Science, C/C++, Data Structures, Algorithms, Combinatorial Optimization, Linear Algebra, Abstract Algebra

## PERSONAL STRENGTH

- Experience in algorithmic problem solving, capable of extracting practical problem features and turning them into theoretical algorithms problems.
- Ability to solve theoretical problems using code and software implementations

## PROJECTS AND RESEARCH

### *Sketching Chamfer Distance*

Sep 2023 - Present

- Discuss the possibility results of algorithms of mapping higher dimensions into Boolean space and calculating point clouds similarities
- Provided a sketching lower bound based on construction

### *Theoretical Lower Bound on Locality Sensitive Hashing*

May 2023 - Present

- Built upon random walk lemma to provide strict lower bound for locality sensitive hashing problem in the  $\Sigma^d$  space
- Identified a distribution pattern of points and suggested an algorithm that improve the performance of empirical algorithm solving approximate nearest neighbor problem in lower dimensions

### *Survey project on Locality Sensitive Hashing Algorithms*

Feb 2023 - May 2023

- Reviewed the current approaches to Locality Sensitive Hashing problem and focused on a dimension dependent algorithm
- Directed possible future approaches to derive a lower bound for LSH when dimension is low

## WORK EXPERIENCE

### Columbia University

New York, NY

*Teaching Assistant*

Sep 2023 - Present

- Teaching assistant for COMS 4231 Analysis of Algorithms
- Hold office hours to answer questions from students and recitations to extend course materials

### China Mobile (Shanghai) Information Communication Technology Co., Ltd.

Shanghai, China

*Algorithm Engineer Intern*

Jun 2021 - Aug 2021

- Derived an optimization model approach and removed a flaw from original optimization algorithm
- Delivered an algorithm to solve scheduling optimization problem using genetic algorithm implemented using Scikit Python Module
- Implemented quadtree data structure using Python to keep a dynamic multidimensional coordinate managing data structure

## SKILLS

Programming Languages: Python, C/C++

Others: MATLAB, LaTeX, Git