

# JIAXU HU

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Applied Math & Coding Theory Researcher

☎ (917)-378-9317

## EDUCATION

**The University of Washington, Seattle, WA 09/2024 – 12/2024**

- Master of Science in Applied & Computational
- GPA: 3.95/4.0

**Rutgers University, New Brunswick, NJ 09/2019 – 05/2023**

- Bachelor of Art in Mathematics
- Dean's List: 2020 Spring, 2021 – 2023

## PROJECTS

**Research Assistant | University of Washington 2025**

As first author, with guide from Professor Kenneth J. Roche, composed a research paper titled "Design, Improve, and Applied the Ternary Error Correction Code Basic on Ternary Parity Check".

- Basic on the binary parity check from Hamming code, extend it to ternary by Xor, design a  $[27, 23, 3]_3$  ternary error correction code as prototype, which could correct at most 1 error.
- Design an alter version 1, by introduce the idea of pairs, improved from prototype to get a higher efficiency. It also support to encode ternary message in any length.
- Designed an alternative version 2 which, compared to the prototype, achieves a Hamming distance of 4 and supports encoding ternary messages of arbitrary length, at the cost of a slightly reduced information rate.
- Developed Python scripts to verify the effectiveness of the error-correcting code, and built an interactive webpage using HTML to allow users to encode and decode using both improved versions.

**Independent Study | Rutgers University 2022**

Under the supervision of Professor Tomasz Imielinski, I conducted an independent study titled "Regulation on Happiness –Does Quality of Movies Matter?" Drawing on data from 91 surveys administered to local AMC audiences, I analyze them on R studio to examine:

- Utilized R Studio to perform statistical analyses (ANOVA,  $p < 0.05$ ) and found that younger audiences are more likely to watch movies with friends or relatives ( $p = 0.03635096$ ).
- Demonstrated that medium-quality movies significantly enhance audience happiness compared to low-quality movies ( $p = 0.002204209$ ).
- Rejected the hypothesis that survey scores align with IMDb ratings ( $p = 0.8025922$ ).

## INTERNSHIP EXPERIENCES

**Math Tutor 2022 - 2023**

Rutgers Math Help Center

Hours: 4 hours/week

Courses Covered:

- Calculus
- Linear Algebra
- Differential Equation
- Mathematical Reasoning

**Operating Department**

**Intern 06/2021 – 07/2021**

CITIC Securities Company

- Collect Data from Weekly Report
- Build Excel Function to Analyze the Data
- Editing Slide Show for Group
- Register Information to System
- Simulate Investment

## MODULES

Dynamical Systems and Chaos

Probability and Random Processes

Networks and Combinatorial Optimization

Machine Learning      Data Analysis

Scientific Computing      Mathematical Logic

Linear Optimization      Geometry

Combinatorial Theory      Set Theory

## SKILLS

Python      MATLAB

Java      HTML

C++      Latex

R      TOEFL 96

Trombone Amateur Level 7