Philip Pincencia

La Jolla, CA (619) 806-7630 ppincencia@ucsd.edu linkedin.com/in/1618lip github.com/1618lip

Education

University of California San Diego **September 2022 – December 2025**
Bachelor of Science in Computer Engineering, Minor in Mathematics *La Jolla, CA*

- 3.97/4.00 overall GPA, 3.95/4.00 major GPA, course list available here
  Relevant Coursework: Advanced Data Structures, Algorithm Design and Analysis, Computer Architecture, Random Processes, Digital Logic

Experience

Signal Processing Chair **June – Present**
IEEE@UCSD *La Jolla, CA*

- Responsible in forming and leading a team for **the Signal Processing Cup** hosted by the IEEE SPS. Topic is on real versus computer-generated image detection in the wild. Currently on the process of preparing resources and recruiting.

Research Intern **June – August 2024**
Jacobs School of Engineering *La Jolla, CA*

- Implemented a **Variable Order Markov Model** algorithm using a **Multiway Trie** to analyze the temporal dynamics of melodic complexity of a jazz solo and recursively computed the probability of any note given any context.
- Processed raw chord changes from the WJazz Database using **C++** and **Regex** to be parsed by the Python Code, which is optimized to increase efficiency by at least 50%.
- Uses jazz theory and **Mutual Information** method to induces pitch probability distribution given harmonic context.
- Researched various measures and analysis methods and benchmarked them to determine which methods are suited.
- Secured funding through the TRELS Scholarship twice and presented at the Summer Research Conference.

ECE Tutor **April – Present**
Jacobs School of Engineering *La Jolla, CA*

- Tutored undergraduate students in a **signals & systems class** (and will tutor for Engineering Probability & Statistics) and facilitated learning by proctoring quizzes and final exam, conducting weekly office hours, answering 200+ questions on the online class forum with an average response time of 5 minutes.
- Lead **Quiz Reviews** to help prepare for the upcoming quiz by meticulously formatting the questions and drawing plots and circuits using LaTeX to resemble the true quiz style.

Supplemental Instruction Leader **June – December 2023**
Teaching and Learning Commons *La Jolla, CA*

- Supported MATH 20B (Calculus II) and PHYS 2B (Electricity & Magnetism) courses by leading in-person and remote sessions that utilize fun, creative methods to review important concepts covered in lectures.
- Supported students earned on average half to a full letter grade higher than the peers who do not, and feedback received indicated students have a more positive attitude towards the subject.

Projects

Speaker Recognition | *MatLab, LaTeX* **July - August 2024**

- Implemented a Speaker Recognition System in *MatLab* using **Mel-Frequency Cepstrum Coefficients** (MFCC), vector quantization and K-clustering.
- Tuned the **Kaiser-Bessel** Window Size, Number of Mel Filter Banks, Number of MFCCs, and Number of Centroids for maximum performance, which yields more than **80%** in accuracy from the test data set and a tolerance of at least **18dB SNR** of added noise.
- Currently working on making a simple GUI to allow easier use to the general public.

High-Frequency Trading Data Compression Using Arithmetic Encoding | *C++* **August 2024 - Present**

- Implemented data compression using **Arithmetic encoding and decoding** given price, volume, and side, compressing the size to **0.7** the original.
- Enhanced the data compression algorithm by incorporating parallel processing with **multithreading** resulting in **0.11** compression ratio, which is a **0.6** decrease.

Technical Skills

Languages: MATLAB, Python, C/C++, HTML/CSS, Java, JavaScript, ARM Assembly, SystemVerilog
Tools/Libraries: VSCode, AutoCAD, Altium, LTSpice, Blender, Raspberry Pi
Languages: Indonesian (Native), English (Professional)

Achievement

UCSD Integration Bee Top 8 overall, World Mathematics Invitational Finalist