Teerapat Jenrungrot
AI Researcher (Audio/Computer Vision)

linkedin.com/in/mjenrungrot github.com/mjenrungrot
+1-(617)-417-5653 tjenrung@cs.washington.edu
https://mjenrungrot.com
Bill & Melinda Gates Center, 3800 E Stevens Way NE, Seattle, WA 98195

Education

2019 - current **University of Washington, Seattle, WA**
Ph.D. Student in Computer Science and Engineering (GPA: 3.97/4)
- Advisors: Ira Kemelmacher-Shlizerman, Steve Seitz
- Affiliations: UW Reality Lab, UW Graphics and Imaging Lab (GRAIL)
- Research Interest: Audio-visual, Deep Learning, Music Information Retrieval

2015 - 2019 **Harvey Mudd College, Claremont, CA**
Bachelor of Science in Computer Science (GPA: 3.8/4, CS GPA: 3.87/4)
- Graduated with High Distinction and Departmental Honors in Computer Science.

Experience

Current – September 2019 **University of Washington** **Seattle, WA**
Research Assistant
- **Audio Source Separation**: Developed a novel method for speech separation using deep learning. Our method illustrates state-of-the-art separation performance, works with real-world voices, and handles arbitrary, unknown number of potentially moving speakers. We published our work as an oral paper in NeurIPS 2020.
  Project Page: Here

Python Pytorch

August 2019 – May 2019 **Amazon.com, Inc.** **Seattle, WA**
Applied Scientist Intern, Customer Behavior Analytics Team
- **Customer Segmentation**: Developed a semi-supervised deep learning algorithm for clustering high-dimensional customer data using Python and MXNet Gluon. The proposed method improved clustering performance by 26% and is deployed to production for improving customer's downstream impact estimation.
- **Distributed Deep Learning**: Developed a pipeline for neural network distributed training and inference using Spark and Amazon EMR cluster.

Python MXNet PyTorch Amazon EMR Amazon EC2 Spark Hadoop

May 2019 – September 2018 **Microsoft Corporation** **Redmond, WA**
Remote Co-op Technical Consultant, Advanced Reading Technologies Team
- **Reading Tool**: Collaborated with a research team from Microsoft Research on a project of developing a reading tool for improving users' reading experience based on an eye-tracking device.
- **Eye-tracking Data Analysis**: Developed an automated system to detect and classify points of interest based on user reading behavior into interested, confused, and skimming categories using Python.

Python JavaScript Flask

May 2019 – January 2016 | Harvey Mudd College — Claremont, CA
Research and Teaching Assistant

- **Research Assistant - Music Information Retrieval**: Developed a dynamic programming algorithm for multi-modal alignment between sheet music and corresponding computer-synthesized MIDI. Designed a deep fully convolutional network for detecting musical notes on sheet music and generating compact representations for the alignment using Python, Keras, and Tensorflow. Our method is published in ISMIR 2019.
- **Research Assistant - PCB Developer**: Designed and developed a PCB consisting of a microcontroller SAM4S and a Cyclone IV FPGA to be used in a microprocessor-based systems class and created lab instructions based on the developed PCB. Our work is published in GLSVLSI 2020.
- **Research Assistant - Stock Market Analysis**: Applied machine learning techniques to detect anomalies in stock market data. Developed a backtesting system and an actual automated trading system that connects to InteractiveBrokers for real-time trading. Developed the distributed system and front-end using Python, Django, and Celery for parallelization.
- **Teaching Assistant**: Tutored students, held office hours, graded students' homework for Machine Learning, Big Data, and Microprocessor-based Digital System.

Python | C/C++ | Keras | Tensorflow | Django | Quartus

August 2017 – May 2017 | Intel Corporation — Santa Clara, CA
Remote Summer Research Assistant

- Proposed a computational model for sound field separation and reconstruction of a 3-dimensional acoustic environment.
- Designed a headphone-based system to simulate 3-dimensional sound localization effects using Head-Related Transfer Functions using Python.

Python

May 2017 – January 2017 | Environmental Data Resources (EDR), Inc. — Shelton, CT
Remote Part-Time Software Developer

- Implemented a Hidden Markov model and support vector machine model for automatically parsing US addresses into computer-readable formats.

Python | C/C++ | scikit-learn

Publications

The Cone of Silence: Speech Separation by Localization — 2020

Proceedings of the 34th Conference on Neural Information Processing Systems (NeurIPS) [Oral Paper] — Vancouver, Canada
Teerapat Jenrungrot∗ , Vivek Jayaram∗ , Steven Seitz , Ira Kemelmacher-Shlizerman

PDF | Code | Project Page

A Board and Projects for an FPGA/Microcontroller-Based Embedded Systems Lab — 2020

Proceedings of the 30th edition of the ACM Great Lakes Symposium on VLSI (GLSVLSI) — Beijing, China
Kaveh Pezeshki , Caleb Norfleet , Erik Meike , **Teerapat Jenrungrot** , Matthew Spencer , Joshua Brake , David M. Harris

PDF | Schematic | Layout

Using Cell Phone Pictures of Sheet Music To Retrieve MIDI Passages — 2020

IEEE Transactions on Multimedia
TJ Tsai , Daniel Yang , Mengyi Shan , Thitaree Tanprasert , **Teerapat Jenrungrot**

PDF | Code | Data

MIDI Passage Retrieval Using Cell Phone Pictures of Sheet Music — 2019

Proceedings of the 20th Conference of the International Society for Music Information Retrieval (ISMIR) — Delft, the Netherlands
Daniel Yang , Thitaree Tanprasert , **Teerapat Jenrungrot** , Mengyi Shan , TJ Tsai

PDF | Code | Data | Talk

MIDI–Sheet Music Alignment Using Bootleg Score Synthesis — 2019

Proceedings of the 20th Conference of the International Society for Music Information Retrieval (ISMIR) — Delft, the Netherlands
Thitaree Tanprasert∗ , **Teerapat Jenrungrot**∗ , Meinard Müller , Timothy Tsai

PDF | Code | Talk

Projets

Coconut Online Interpreter 2018

https://cs121-team-panda.github.io/coconut-interpreter/ github.com/cs121-team-panda/coconut-interpreter

Designed and implemented a web-based online interpreter for the open-source Coconut programming language using Flask, React, and AWS Lambda. Built fully automated CI/CD pipelines on CircleCI.

Python | JavaScript | React | Flask | Amazon Lambda | CI/CD

FPGA-based Cryptocurrency Platform 2017

github.com/fangherk/MicroPCoin

Designed and implemented a simulated cryptocurrency platform with hash computations by FPGA using Raspberry Pi, C, Flask, and SystemVerilog.

Python | C/C++ | SystemVerilog | Flask | FPGA | Raspberry Pi

Honors

November 2018	**5th Place**, ACM-ICPC Southern California Regional 2018
March 2018	**Honorable Mention**, North American Invitational Programming Contest 2018
November 2017	**5th Place**, ACM-ICPC Southern California Regional 2017
September 2017	**1st Place**, Microsoft Coding Competition (MSFT3C) - Harvey Mudd College
November 2016	**9th Place**, ACM-ICPC Southern California Regional 2016
November 2015	**7th Place**, ACM-ICPC Southern California Regional 2015
May 2014	**Honorable Mention**, Asia-Pacific Informatics Olympiad 2014
May 2013	**1st Place/Gold Medal**, Thailand Olympiad in Informatics 2013

Skills

Programming	Python, Spark, C/C++, JavaScript, LaTeX, SystemVerilog, Tensorflow, Keras, MXNet, PyTorch
Services	Amazon EC2, Amazon EMR, Amazon S3, Amazon Lambda, CI/CD
Web Development	Node.JS, Django, Flask, Redux, React, HTML5