Teerapat Jenrungrot

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Education

- **University of Washington, Seattle** — Seattle, Washington
  Ph.D. Student in Computer Science and Engineering — *Sep. 2019 - Exp. Jun. 2024*
  Research Interest: Deep Learning, Audio-visual Representation, Music Information Retrieval, AR/VR, Computer Vision
  Affiliations: UW Graphics and Imaging Lab (GRAIL), UW Reality Lab
  Advisors: Ira Kemelmacher-Shlizerman, Steven Seitz
- **Harvey Mudd College** — Claremont, California
  Bachelor of Science in Computer Science (GPA: 3.8/4, CS GPA: 3.87/4) — *Aug. 2015 - May. 2019*
  Graduated with High Distinction and Departmental Honors in Computer Science

Selected Publications

- **MIDI Passage Retrieval Using Cell Phone Pictures of Sheet Music**, In *Proceedings of the 20th Conference of the International Society for Music Information Retrieval (ISMIR), Delft, The Netherlands, 2019*, to appear.
- **MIDI-Sheet Music Alignment Using Bootleg Score Synthesis**, In *Proceedings of the 20th Conference of the International Society for Music Information Retrieval (ISMIR), Delft, The Netherlands, 2019*, to appear.
- **Camera-Based Sheet–MIDI Passage Retrieval Using Bootleg Score Features**, Submitted to *IEEE Transactions on Multimedia*, 2019.

Experience

- **Amazon.com, Inc.** — Seattle, Washington
  Applied Scientist Intern, Customer Behavior Analytics Team — *May. 2019 - Aug. 2019*
  - **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 currently migrated 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.
- **Microsoft Corporation** — Redmond, Washington
  Remote Co-op Technical Consultant, Advanced Reading Technologies Team — *Sep. 2018 - May. 2019*
  - **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.
- **Harvey Mudd College** — Claremont, California
  Research and Teaching Assistant — *Jan. 2016 - May. 2019*
  - **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.
  - **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.
  - **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 Design.
- **Intel Corporation** — Santa Clara, California
  Remote Summer Research Assistant — *May. 2017 - Aug. 2017*
  - 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.

- **Environmental Data Resources (EDR), Inc.** Shelton, Connecticut
  Remote Software Developer *Jan. 2017 - May. 2017*
  - Implemented a Hidden Markov model and support vector machine model for automatically parsing US addresses into computer-readable formats.

Projects

- **Fast KDE with Error Guarantees**: Implemented a non-parametric approach for performing kernel density estimation using the nearest neighbor data structure Kd-tree. Evaluated the proposed method by comparing with the state-of-the-art baseline kernel density estimator.
- **Quantifying Information Gain in Infinite Space**: Developed a theoretical framework used for quantifying an information gain when transitioning from infinite space to finite space by using cumulative distribution functions. Demonstrated the proposed framework on the decision tree algorithm.
- **Coconut Online 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.
- **FPGA-based Cryptocurrency Platform**: Designed and implemented a simulated cryptocurrency platform with hash computations by FPGA using Raspberry Pi, C, Flask, and SystemVerilog.

Honors

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

Programming Skills

- **Programming**: Python, Spark, C/C++, Node.JS, LaTeX, SystemVerilog, Tensorflow, Keras, MXNet, Pytorch
- **Services**: Amazon EC2, Amazon EMR, Amazon S3, Amazon Lambda
- **Web**: Django, Flask, Redux, React, HTML5