

Teerapat JENRUNGROT

PERSONAL INFORMATION

DATE OF BIRTH:	March 18, 1995	GITHUB:	mjenrungrot
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EDUCATION

MAY 2019 (Expected) Bachelor of Science
COMPUTER SCIENCE, [Harvey Mudd College](#), California
GPA: 3.79/4.00 (CS Major GPA: 3.91/4.00)

PREPRINT PUBLICATIONS

Thitaree Tanprasert, **Teerapat Jenrungrot**, Meinard Müller, and TJ Tsai, *MIDI-Sheet Music Alignment Using Bootleg Score Synthesis*, preprint, under review for 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). [\[PDF\]](#)

Teerapat Jenrungrot and TJ Tsai, *Audio-Sheet Music Alignment using Soft Bootleg Score Synthesis*, preprint. [\[PDF\]](#) [\[Code\]](#)

WORK EXPERIENCE

CURRENT - AUGUST 2018	Remote Co-op Technical Consultant Microsoft Corporation Worked with 4 other students and a team from Microsoft Research to develop a system that improves users' reading experience by using eye-tracking data. Developed a system to classify confusing and interesting regions in reading based on users' gaze behavior. This project is a part of Harvey Mudd College's year-long senior capstone project supervised by Professor Julie Medero from HMC CS Department and a liaison from Microsoft, Rob McKaughan .
AUGUST 2018 - MAY 2018	Summer Research Assistant Harvey Mudd College, Engineering Department Developed a dynamic programming algorithm for creating an alignment between sheet music and a computer-synthesized audio signal in MIDI format. Designed a deep fully convolutional network for detecting musical notes on sheet music and creating useful representations for the alignment. Fine-tuned the network with real scanned sheet music to handle both scanned and computer-generated sheet music. The project is supervised by Professor Timothy Tsai from HMC Engineering Department.
CURRENT - JANUARY 2016	Grader and Tutor Harvey Mudd College Tutored students and graded students' homework for the following Math, CS, and Engineering classes: Multivariable Calculus, Differential Equations/Linear Algebra, Principles of Computer Science, Computability and Logic, Mathematics of Big Data, Machine Learning, and Microprocessor Systems: Design & Applications

WORK EXPERIENCE (CONTINUED)

MAY 2018 - JANUARY 2017	<p>Research Assistant <i>Harvey Mudd College, Engineering Department</i></p> <p>Developed a system using Matlab and C/C++ to identify a song from a short, noisy cell phone recording of the corresponding live performance. Optimized the computationally intensive portion of the system originally written in Matlab by using C/C++ via MEX routines. Applied GPU acceleration and parallelization to the system. The project is supervised by Professor Timothy Tsai from HMC Engineering Department.</p>
MAY 2018 - SEPTEMBER 2017	<p>PCB Developer, Lab Assistant <i>Harvey Mudd College, Engineering Department</i></p> <p>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. The project is supervised by Professor David Money Harris from HMC Engineering Department and Professor Matthew Spencer from HMC Engineering Department.</p>
AUGUST 2017 - MAY 2017	<p>Summer Research Assistant, Remote Technical Consultant <i>Intel Corporation</i></p> <p>Proposed a computational model for sound field separation and reconstruction of a 3-dimensional acoustic environment. Designed and implemented a headphone-based system to simulate 3-dimensional sound localization effects using Head-Related Transfer Functions (HRTF). The project is supervised by Professor Weiqing Gu from HMC Mathematics Department in collaboration with Intel's researchers.</p>
MAY 2017 - JANUARY 2017	<p>Remote Software Developer <i>Environmental Data Resources (EDR), Inc.</i></p> <p>Implemented a Hidden Markov model and support vector machine model for automatically parsing US addresses into computer-readable formats. The project is supervised by Professor Weiqing Gu from HMC Mathematics Department in collaboration with EDR's representatives.</p>
MAY 2017 JUNE 2016	<p>Software Developer <i>Harvey Mudd College, Computer Science Department</i></p> <p>Developed an interactive visualization using D3.js for showing data of schools within California for non-profit organization STEAM:CODERS to promote computer science to underrepresented groups. Volunteered to improve CSS and JavaScript on Turning Green's website for interactive user experience to advocate for environmental initiatives in US colleges.</p>
AUGUST 2016 - MAY 2016	<p>Summer Research Assistant <i>Harvey Mudd College, Mathematics Department</i></p> <p>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. The project is supervised by Professor Weiqing Gu from HMC Mathematics Department.</p>

CLASS PROJECTS AND PERSONAL PROJECTS

CURRENT - AUGUST 2018	<p>Generative model for synthesizing music from human pose <i>HMC CS186: Computer Science Research/Independent Study</i></p> <p>Developed a deep learning model for synthesizing musical beats from estimated pose in dance videos. The project is supervised by Professor Zachary Dodds from HMC Computer Science Department. [Link: https://github.com/mjenrungrot/listenToMeDance]</p>
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CLASS PROJECTS AND PERSONAL PROJECTS (CONTINUED)

AUGUST 2018 - DECEMBER 2018	<p>Quantifying Information Gain in Infinite Space <i>HMC CS181P: Machine Learning, Info, and Search</i></p> <p>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. The project is supervised by Professor George Montanez from HMC Computer Science Department.</p>
MAY 2018 - JANUARY 2018	<p>Mouth Shape Analysis <i>HMC CS186: Computer Science Research/Independent Study</i></p> <p>Developed a computational framework using deep convolutional networks to analyze human mouth shapes. Tested the developed system with video stream data. The project is supervised by Professor Zachary Dodds from HMC Computer Science Department. [Link: https://github.com/mjenrungrot/mouth-shape-analysis]</p>
MAY 2018 - JANUARY 2018	<p>Coconut Online Interpreter <i>HMC CS121: Software Development</i></p> <p>Designed and implemented a web-based online interpreter for the open-source Coconut programming language using Flask, React, and AWS Lambda. [Link: https://cs121-team-panda.github.io/coconut-interpreter/]</p>
DECEMBER 2017 - SEPTEMBER 2017	<p>Simplified Virtual Private Network (VPN) <i>HMC CS181N: Computer Security</i></p> <p>Implemented a simplified system of SSL Virtual Private Network. Simulated the implementation in virtual machines. [Link: https://github.com/mjenrungrot/vpn]</p>
DECEMBER 2017 - SEPTEMBER 2017	<p>FPGA-based Cryptocurrency Platform <i>HMC E155: Microprocessor Systems: Design & Applications</i></p> <p>Designed and implemented a simulated cryptocurrency platform with hash computations by FPGA using Raspberry Pi, C, Flask, and SystemVerilog. [Link: https://github.com/fangherk/MicroPCoin]</p>
MAY 2017 - MARCH 2017	<p>Image Style Learning <i>HMC CS152: Neural Networks</i></p> <p>Designed a method for extracting and visualizing image style information using a deep convolutional neural network. [Link: https://github.com/mjenrungrot/hmc-cs152]</p>
JANUARY 2017	<p>Toll Plaza Modeling <i>The Mathematical Contest in Modeling (MCM) 2017</i></p> <p>Designed and proposed a geometrical, mathematical model for optimizing the traffic at a toll plaza. Simulated the proposed model with randomly generated examples. Ranked top 40% in the MCM competition.</p>
DECEMBER 2016 - AUGUST 2016	<p>Data Analytics on Soybean Data <i>HMC Math189R: Mathematics of Big Data I</i></p> <p>Designed and proposed a machine learning method for predicting good quality soybean seeds based on the provided dataset from the INFORMS O.R. & Analytics Student Team Competition 2017.</p>

COMPUTER SKILLS

Strong Experience:	C/C++, Python, Matlab, HTML/CSS, and Javascript.
Proficient:	Haskell, MySQL, Bash Script, PADS, ModelSim, Quartus, gdb, \LaTeX
Knowledgeable:	Racket, Mathematica

LANGUAGES

THAI: Native ENGLISH: Fluent
JAPANESE: Intermediate

PROGRAMMING COMPETITIONS

November 2018	5 th place - ACM-ICPC Southern California Region 2018
March 2018	Honorable Mention - North American Invitational Programming Contest 2018
November 2017	5 th place - ACM-ICPC Southern California Region 2017
September 2017	1 st place - Microsoft Coding Competition (MSFT3C) - Harvey Mudd College
November 2016	9 th place - ACM-ICPC Southern California Region 2016
June 2016	Top 500 - Google Distributed Code Jam 2016 (Round 2)
April 2016	Honorable Mention - North American Invitational Programming Contest 2016
November 2015	7 th place - ACM-ICPC Southern California Region 2015
September 2015	1 st place - Microsoft Coding Competition (MSFT3C) - Harvey Mudd College
January 2015	Top 1000 - Facebook Hacker Cup 2015 (Round 2)
May 2014	Honorable Mention - Asia-Pacific Informatics Olympiad 2014
May 2013	1 st place / Gold Medal - Thailand Olympiad in Informatics 2013
May 2012	Gold Medal - Thailand Olympiad in Informatics 2012
May 2011	Silver Medal - Thailand Olympiad in Informatics 2011

INTERESTS AND ACTIVITIES

Algorithms, artificial intelligence, competitive programming, computer games, computer security, cooking, cryptography, data structure, engineering, image processing, machine learning, photography, travel, typography (e.g. graphic design, \LaTeX), and video editing (in alphabetical order).