

MENGYI SHAN

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📍 3800 E Stevens Way NE #284, Seattle WA, 98195

EDUCATION

University of Washington, Seattle, WA

Sep. 2021 – Now

- Ph.D. in Computer Science and Engineering
- Affiliations: UW Reality Lab, UW Graphics and Imaging Lab (GRAIL)
- Advisors: Ira Kemelmacher-Shlizerman, Steve Seitz, Brian Curless

Harvey Mudd College, Claremont, CA

Aug. 2017 – May 2021

- B.S. Double Major in Computer Science and Mathematics
- GPA: 3.95/4.00. Graduated with High Distinction and Department Honors
- Thesis: Geometric Unified Method in 3D Object Classification
- Advisors: TJ Tsai, Weiqing Gu

CONFERENCE PUBLICATION

StyleSDF: High-Resolution 3D-Consistent Image and Geometry Generation, Roy Or-EI, Xuan Luo, **Mengyi Shan**, Eli Shechtman, Jeong Joon Park, Ira Kemelmacher-Shlizerman. Submitted to IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022.

Partial Match Alignment with Hidden State Time Warping, Claire Chang, Thaxter Shaw, Arya Goutam, Christina Lau, **Mengyi Shan**, TJ Tsai. Submitted to IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2021.

Improved Handling of Repeats and Jumps in Audio-Sheet Image Synchronization, **Mengyi Shan**, TJ Tsai. In Proceedings of the Conference of the International Society for Music Information Retrieval (ISMIR) 2020.

MIDI Passage Retrieval Using Cell Phone Pictures of Sheet Music, Daniel Yang*, Thitaree Tanprasert*, Teerapat Jenrungrot, **Mengyi Shan**, TJ Tsai. In Proceedings of the Conference of the International Society for Music Information Retrieval (ISMIR) 2019.

JOURNAL ARTICLE

Automatic Generation of Piano Score Following Videos, **Mengyi Shan**, TJ Tsai. Transactions of the International Society for Music Information Retrieval, 2021.

Camera-Based Sheet-MIDI Passage Retrieval Using Bootleg Score Features, TJ Tsai, Daniel Yang, **Mengyi Shan**, Thitaree Tanprasert, Teerapat Jenrungrot. IEEE Transactions on Multimedia, 2020.

RESEARCH EXPERIENCE

Graphics and Imaging Lab (GRAIL), University of Washington

Sep. 2021 – Now

Music Information Retrieval Lab, Harvey Mudd College

Jan. 2019 – May 2021

Advisor: TJ Tsai

- **Score Following:** Developed a system that aligns a piano recording with scanned sheet music images to automatically generate a score following video. Proposed a novel alignment algorithm to handle repeats and jumps in time series of musical performance.
- **Audio Cross-Verification:** Designed an audio tampering detection system to protect world leaders from fake speech recordings. Improved the alignment algorithm to handle various types of tampering operations in audio.

Topics in Differential Geometry Research, Harvey Mudd College

Sep. 2019 – May 2020

Advisor: Weiqing Gu, Nicholas J. Pippenger

- **Algorithmic Mathematical Derivation:** Extensively inspected existing literature on the current status of 3D object classification as a computer vision task. Summarized and documented detailed mathematical derivation for differential geometric algorithms.
- **Geometric Unified Representation:** Designed a representation to characterize surfaces with differential geometric measures. Defined and computed feature matrix and shape derivatives to describe a 3D point cloud. Applied these representations to deep learning architecture.

Wolfram Summer Program, Wolfram Research Inc., Boston MA

Jun. 2018 – Jul. 2018

- **Punctuation Restoration:** Designed, constructed and compared several recurrent neural network models to restore English text punctuations.

EMPLOYMENT

Vobile Group, Research Consultant, Santa Clara, CA

Aug. 2020 – May 2021

- **Cover Song Identification:** Developed a Temporal Pooling CNN and assessed different audio features to enable the detection of subtle or complex variations of recordings. Analyzed existing literature and incorporated metadata and lyrical analysis
- **Multimedia Copyright Protection:** Extended Vobile's Mediawise fingerprinting algorithm to multimedia domains including raw video. Designed an automatic copyright protection system.

Software Engineering Intern, Google Inc., Los Angeles, CA

May 2019 – Aug. 2019

- **Data Integration:** Experimented with importing data from manual tests. Created automatic pipeline workflow to integrate test log data from a database to an interactive dashboard.
- **Test Tracking:** Tracked manual testing progress and ingested it inside of the scenario/feature coverage solution. Summarized and transformed scenario coverage data of test suites.

TEACHING

Teaching Assistant, Department of CS and Math, Harvey Mudd College

- **MATH055 HM**, Discrete Mathematics Fall 2018
- **MATH131 SC**, Mathematical Analysis 1 Fall 2018
- **CS081 HM**, Computability and Logic Fall 2018
- **MATH 171 HM**, Abstract Algebra Spring 2019
- **CS070 HM**, Data Structure and Programming Development Spring 2019

- **MATH189R HM**, Mathematics and Big Data Spring 2020, Summer 2020, Summer 2021
- **CS151 HM**, Artificial Intelligence Fall 2020
- **CS158 HM**, Special Topics in Machine Learning Spring 2021

Academic Excellence, 1st & 2nd Year Tutor Service, Harvey Mudd College Sep. 2019 – May 2021

- **MATH019 HM**, Single and Multivariable Calculus
- **MATH073 HM**, Linear Algebra
- **MATH055 HM**, Discrete Mathematics
- **MATH045 HM**, Ordinary Differential Equation 1
- **MATH065 HM**, Linear Algebra and Ordinary Differential Equation 2

HONORS

Chavin Prize , Harvey Mudd College Department of Mathematics	Sep. 2020
Meritorious Award , The Mathematical Contest in Modeling (MCM), COMAP	Apr. 2019
Robert James Prize , Harvey Mudd College Department of Mathematics	Sep. 2018
R.I.F. Scholarship , Harvey Mudd College Department of Mathematics	Sep. 2018
Honorable Mention (93rd) , Putnam Math Competition, American Math Association	Feb. 2018
Second Prize Team Round , Harvard-MIT Mathematics Tournament (HMMT)	Feb. 2016
First Prize , Chinese National Mathematics Olympiad	Oct. 2015

SKILLS

Programming: Python, Java, C/C++, HTML/CSS, MATLAB, R, Mathematica, LaTeX

Spoken language: English, Mandarin Chinese (native), Japanese (JLPT-N2)