Mengyi Shan

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

EDUCATION

University of Washington, Seattle, WA

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

Harvey Mudd College, Claremont, CA

- 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
- Asvisors: TJ Tsai, Weiqing Gu

CONFERENCE PUBLICATION

Animating Street View, **Mengyi Shan**, Brian Curless, Ira Kemelmacher-Shlizerman, Steve Seitz. SIGGRAPH Asia 2023.

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

Improved Handling of Repeats and Jumps in Audio-Sheet Image Synchronization, **Mengyi Shan**, TJ Tsai. 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. The Conference of the International Society for Music Information Retrieval (ISMIR) 2019.

JOURNAL ARTICLE

Partial Match Alignment with Hidden State Time Warping, Claire Chang, Thaxter Shaw, Arya Goutam, Christina Lau, **Mengyi Shan**, TJ Tsai. Applied Sciences, 2022.

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 Advisors: Steve Seitz, Brian Curless, Ira Kemelmacher-Shlizerman Sep. 2021 - Now

Aug. 2017 - May 2021

Sep. 2021 - Now

909-288-9488

- Video Conference Relighting: Improve the lighting quality of video conference calls by using the desktop monitor as a virtual light stage.
- Populating and Animating Empty Street: Add naturally behaving characters to empty street scenes by modeling scene semantic understanding and human-scene interaction.

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 performances.
- 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: Weiging 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

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

EMPLOYMENT

OPPO US Research Center, Research Intern, Bellevue, WA

- Motion Dataset Collection: Collect in the wild text-human motion datasets from text-toimage public datasets.
- Motion Generation: Generate diverse human motions with diffusion models. Focus on multiperson interaction motion sequences.

Vobile Group, Research Consultant, Santa Clara, CA

- **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 Mediawise fingerprint algorithm to multimedia domains including raw video. Designed an automatic copyright protection system.

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

- 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.

Aug. 2020 - May 2021

May 2019 - Aug. 2019

Jun. 2018 – Jul. 2018

June 2023 - Now

TEACHING

Seminar Organizer, Paul G. Allen School of Computer Science and Engineering, University of Washington

CSE 590-V, Computer Vision Seminar.

Teaching Assistant, Paul G Allen School of Computer Science and Engineering, University of Washington

• CSE 457 , Computer Graphics	Autumn 2023
Teaching Assistant, Department of CS and Math, Harvey Mud	ld 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 Develop	oment Spring 2019
• MATH189R HM, Mathematics and Big Data Sp	ring 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 Muter MATH019 HM, Single and Multivariable Calculus 	dd College Sep. 2019 - May 2021

Autumn 2022

- MATH073 HM, Linear Algebra
- MATH055 HM, Discrete Mathematics
- MATH045 HM, Ordinary Differential Equation 1
- MATH065 HM, Linear Algebra and Ordinary Differential Equation 2

Honors

OPPO Fellowship, University of Washington, Graphics and Imaging Laboratory	Apr. 2022
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-N1)