Jenny Han Lin

Contact Info

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Academic Employment

University of Utah August 2024 - Current
Postdoctoral Researcher
Advisor: Prof. Cem Yuksel (University of Utah)

Education

Carnegie Mellon University (CMU) September 2017 - August 2024
Ph.D. in Computer Science
Thesis: Formalizing Object Equivalence in Machine Knitting

Massachusetts Institute of Technology (MIT) September 2011 - June 2015
Bachelors of Engineering, Class of 2015.
- Major: 6-7: Computer Science and Molecular Biology.
- GPA: 4.7 / 5.0.

Industry Positions and Internships

⋆ **Amazon** Summer '21 & Spring '22
Science Intern New York, NY
- Mentors: Sunil Hadap and Alla Sheffer
- Goal: developing a concrete evaluation metric for garment fit.
- Worked with simulated garment geometry on SMPL body meshes to generate learnable metrics for evaluating garment fit.

⋆ **UCLA Center for Vision, Cognition, Learning and Autonomy** Aug '16 - Aug '17
Staff Research Associate Los Angeles, CA
- Advisors: Prof. Song-Chun Zhu (UCLA) and Prof. Philippe Schyns (University of Glasgow)
- Goal: to provide a unified framework for evaluating robotics, high-level computer vision tasks, and human cognition inside virtual environments using real-time physics-based simulations.
- Developed various dynamic virtual scenes for testing agent performance in Unreal Engine 4.
- Designed experimental setup for evaluating the difference in human performance between real-world and virtual environments.

⋆ **3BlackDot** Jan '16 - June '16
Software Engineer Los Angeles, CA
- Developed three minute Virtual Reality demo.
- Added dedicated servers to existing video game Dead Realm.

⋆ **Square Enix, Japan** July '15 - November '15
Software Engineer Tokyo, JP
- Goal: to explore the applications of Virtual Reality in video game production.
- Developed two-player asymmetrical game which combined perspective tracking with Virtual Reality.

⋆ **MIT Computer Science and Artificial Intelligence Laboratory** June '14 - June '15
Undergraduate Researcher Cambridge, MA
- Advisors: Dr. Yuchun Guo (MIT) and Prof. David Gifford (MIT)
- Goal: to improve the spatial accuracy of protein-DNA binding site detection by incorporating information from paired-end sequencing tags
- Modified existing sequencing data analysis method Genome Positioning System to use paired-end data.
- Compared accuracy of new analysis method to several existing methods.

⋆ **UCLA Semel Institute** June '13 - Sept '13
Undergraduate Researcher Los Angeles, CA
- Advisors: Profs. William Yang and Steve Horvath (UCLA)
- Goal: to determine genetic similarity between HD patients and disease mouse models as well identify gene sets with irregular expression
- Analyzed RNA expression in Huntingtons disease patients and corresponding mouse models.
- Presented findings at Huntington's Disease Society of America 2014 Convention.

⋆ **MIT BioMicro Center** June '12 - Aug '13
Undergraduate Researcher Cambridge, MA
– Advisors: Prof. Stuart Levine (MIT)
– Goal: to allow researchers to perform genome sequencing on partial flowcells, thus saving reagents on small experimental batches.
– Created pipeline to convert existing .json files with full flowcell sequencing instructions into partial flowcell instructions.
– Results and pipeline published in Biotechniques.

⋆ **UCLA Department of Molecular, Cell & Developmental Biology** Sept '07- Mar '11
Research Intern Los Angeles, CA
– Mentor: Dr. Nadia Danilova (UCLA)
– Goal: to determine the involvement of p53 in birth defects due to genetic mutations
– Performed PCR, Western blot analysis and zebrafish husbandry.

Awards and Scholarships

IEEE International Conference on Robotics and Automation Best Conference Paper
Finalist 2021

MIT iOS Game Competition, MIT
3rd place 2014

Donald A. King Summer Research Fellowship, University of California, Los Angeles
One of three recipients 2013

Teaching Experience

⋆ **Guest Lecturer for Computational Design and Fabrication Course (UW)** Fall '23
– Taught foundations of machine knitting programming in an undergraduate course on computational fabrication

⋆ **Guest Lecturer for E-Textiles Course (UW)** Fall '21
– Taught basics of transfer planning in machine knitting programs

⋆ **Guest Lecturer for Algorithmic Textile Design (CMU 15-463)** Spring '19 & Spring '21
– Taught basics of transfer planning in machine knitting programs

⋆ **TA for Computational Photography (CMU 15-463)** Fall '20 & Fall '21
– Advanced undergraduate/introductory graduate course on computational photography.
– In addition to office hours and grading, converted existing assignments from MATLAB to Python.

Invited Talks

⋆ **Semantics, Knot Theory, and Intuition: Defining Meaning for Machine Knitting Programs**
– Denison University Technical Communications Course Oct '24
Hosted by Prof. Ashwin Lall Granville, OH
– University of Victoria Computer Science Colloquium Feb '24
Hosted by Prof. Sowmya Somanath Victoria, BC
– University of Notre Dame Computer Science Seminar Feb '24
Hosted by Prof. Walter Scheirer South Bend, IN

⋆ **Formal Equivalence and Fuzzy Intuition for Object Equivalence**
– Symposium on Computational Fabrication Sketch Talk July '24
Juried Invited Talk Aarhus, DK

⋆ **Program Equivalence for Machine Knitting Via the Power of Fenced Tangles**
– Massachussetts Institute of Technology Graphics Seminar Oct '23
Hosted by Prof. Jonathan Ragan-Kelley Cambridge, MA
– Boston University Graphics Seminar Oct '23
Hosted by Profs. Edward Chien and Emily Whiting Victoria, BC
– Cornell University Department of Human Centered Design Lecture Aug '23
Hosted by Prof. Cindy Hsin-Liu Kao Ithaca, NY

⋆ **Topological Insights for Representing Machine Knit Objects**
– University of Washington Computation Fabrication Seminar Oct '22
Hosted by Prof. Adriana Schulz Seattle, WA

Service and Outreach

⋆ **TA for Knitout Office Hours** Oct '18 - Present
- Answer questions about knit programming at weekly sessions where the knitting machine is available for usage by the greater CMU community
- Wrote initial tutorial knitout posts, available at the textiles lab website

⋆ **SIGBOVIK Chair** Sept '18 - Apr '22
- Committee member for an annual conference on comedic computer science "research"
- Organized in-person ('19, '22) and remote ('20, '21) events with multiple speakers, developed website ('19), compiled proceedings ('21-'22), and recruited/directed other committee members ('20-'22), as well as many other tasks too comedic to list

⋆ **Technights Instructor** Jan '20 - Feb '20
- Instructor for a STEM outreach program for girls grade 6-8
- Developed lesson plan and group activity about the wallpaper symmetry groups

⋆ **Reviewer**
- Reviewed papers for Pacific Graphics, Computer-Aided Design, SIGGRAPH Asia, ACM SCF, ACM UIST

Publications

J. Lin, Y. Ikarashi, G. Bernstein, and J. McCann.
UFO Instruction Graphs are Machine Knittable.
In ACM Transactions on Graphics (SIGGRAPH Asia '24).

J. Lin, V. Narayanan, Y. Ikarashi, J. Ragan-Kelley, G. Bernstein, and J. McCann.
Semantics and Scheduling for Machine Knitting Compilers.
In ACM Transactions on Graphics (SIGGRAPH '23).

J. Lin, and J. McCann.
An Artin Braid Group Representation of Knitting Machine State with Applications to Validation and Optimization of Fabrication Plans.
In 2021 IEEE International Conference on Robotics and Automation (ICRA '21).
Best Conference Paper Finalist.

M. Guo, **J. Lin**, V. Narayanan, and J. McCann.
Representing Crochet with Stitch Meshes.
In Proceedings of the 5th Annual ACM Symposium on Computational Fabrication (SCF '20).

J. Lin, V. Narayanan, and J. McCann.
Efficient Transfer Planning for Flat Knitting.
In Proceedings of the 3rd Annual ACM Symposium on Computational Fabrication (SCF '18).

C. Jiang*, Y. Zhu*, S. Qi*, S. Huang*, **J. Lin**, X. Guo, L.-F. Yu, D. Terzopoulos, and S.-C. Zhu.
Configurable 3D Scene Synthesis and 2D Image Rendering with Per-pixel Ground Truth Using Stochastic Grammars.
In International Journal of Computer Vision (IJCV '18).

J. Lin*, J. Kubricht*, Y. Zhu*, H. Lu, and S.-C. Zhu.
Visuomotor Adaptation and Sensory Recalibration in Reversed Hand Movement Task.
39th Annual Meeting of the Cognitive Science Society (CogSci '17).

J. Lin*, X. Guo*, J. Shao*, C. Jiang, Y. Zhu, and S.-C. Zhu.
A Virtual Reality Platform for Dynamic Human-Scene Interaction.
SIGGRAPH Asia Workshop on Virtual Reality Meets Physical Reality, 2016.

MT. Gravina, **J. Lin**, and S.S. Levine.
Lane-by-lane sequencing using Illumina's Genome Analyzer II.
Biotechniques, 2013. 54(5):265-9.

N. Danilova, A. Kumagi, and **J. Lin**.
p53 upregulation is a frequent response to deficiency of cell-essential genes.
PLoS One, 2010. 5(12):e15938.

Abstracts / Posters

J. Lin and J. McCann.
Leveraging Temporal Constraints for Simplified Knit Representation.
American Physical Society March Meeting, 2021.

J. Lin and J. McCann.
Knitting Machine State Representation Using the Artin Braid Group.
American Physical Society March Meeting, 2020.

M. Guo, **J. Lin**, V. Narayanan, and J. McCann.
Representing Crochet with Stitch Meshes.
ACM SIGGRAPH Posters Session, 2020.

Z. Banks, V. L. Butty, **J. Lin**, and S. S. Levine.
Which RNA-Seq processing algorithm should I pick?
A comparison of RNA-Seq pipelines based on experimental parameters.
The 14th annual Advances in Genome Biology and Technology, 2013.