Tomer Weiss

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Research Interests

Graphics and Vision real-time optimization, physics-based simulation and modeling, crowd simulation, mixed reality

Machine Learning deep generative models, representation learning, reinforcement learning, statistical and crowd sourced learning

Employment And Affiliations

2020-Present **Assistant Professor**, *Dept. of Informatics*, Ying Wu College of Computing, New Jersey Institute of Technology.
Newark, NJ

2018-2019 **Computer Vision**, *Wayfair*, Boston.

Sum. 2017 **Researcher**, *Autodesk Research*, San Fransisco.

Sum. 2016 **Machine Learning Researcher**, *A9.com (Amazon Search)*, Palo Alto.

Sum. 2015 **Software Engineer**, *Bloomberg LP*, New York.

2012-2013 **Software Engineer**, *Parametric Technology Corp.*

2011-2012 **Software Engineer**, *Datonics LLP.*

Academic Background

2013–2018 **Ph.D., computer science**, *University of California, Los Angeles.*
Advisor: Demetri Terzopoulos
Committee: Stanley Osher, Joseph Teran, Song-Chun Zhu
Thesis: A Constraint-Based Approach to Crowd Simulation and Layout Design
Computer Science Departmental Fellowship

2013–2015 **M.S., computer science**, *University of California, Los Angeles.*
Advisor: Demetri Terzopoulos
Thesis: Optimizing Design of Physical Objects for Fabrication

2009–2012 **B.S. computer science**, *Tel Aviv University*, Tel Aviv, Israel.

Publications

2020 **Decorating Spaces in Augmented Reality**
T.Weiss et al.
Submitted to Graphics Interface

2020 **Towards Automatic Furniture Placement for Interactive Room Layout Design**
E.Ataer-Cansizoglu, H.Liu, T.Weiss, A.Mitra, D.Dholakia, J.Choi and D.Wulin
Manuscript in preparation

2019 **Room Style Estimation for Style-Aware Recommendation**
E.Cansizoglu, H.Liu, T.Weiss, A.Mitra, D.Dholakia, J.Choi, D.Wulin
IEEE International Conference on Artificial Intelligence & Virtual Reality (AIVR), Dec. 9-11

2019 **Implementing Position-Based Real-Time Simulation of Large Crowds**
T.Weiss
MARCH Workshop on Modeling and Animating Realistic Crowds and Humans,
IEEE International Conference on Artificial Intelligence & Virtual Reality (AIVR), Dec. 9-11

2018 **Deep Learning of Biomimetic Sensorimotor Control for Biomechanical Human Animation**
M.Nakada, T.Zhao, H.Chen, T.Weiss, D.Terzopoulos
ACM Transactions on Graphics (SIGGRAPH), Aug 12-16

2018 **Position-Based Real-Time Crowd Simulation of Large Crowds**
T.Weiss, A.Litteneker, C.Jiang, D.Terzopoulos
Computers & Graphics

2018 **Fast and Scalable Position-Based Layout Synthesis**
T.Weiss, A.Litteneker, N.Duncan, M.Nakada, C.Jiang, L.Yu, D.Terzopoulos
Short version in IEEE Conference on Computer Vision and Pattern Recognition (CVPR) workshop on Vision Meets Cognition, June 18-22
IEEE Transactions on Visualization and Computer Graphics (TVCG)

2017 **Position-Based Multi-Agent Dynamics for Real-Time Crowd Simulation**
T.Weiss, A.Litteneker, C.Jiang, D.Terzopoulos
Short version in Proc. of the ACM SIGGRAPH/Eurographics Symposium on Computer Animation, July 28-30
Proc. of the Tenth International ACM SIGGRAPH Conference on Motion in Games, Nov 8-10 (Media: Gamasutra) Invited to contribute an extended blog version
Best Paper Award

2017 **Automated Layout Synthesis and Visualization From Images of Interior or Exterior Spaces**
T.Weiss, M.Nakada, D.Terzopoulos
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) workshop on Vision Meets Cognition, July 21-26

2016 **Make it Float: Optimizing Design of Physical Objects for Fabrication**
T.Weiss, G.Klar, D.Terzopoulos
UCLA Technical Report 170005

Honors and Awards

2018 **Invitee, ACM SIGGRAPH ASIA Doctoral Consortium**, *Tokyo, Japan*.

2018 **Finalist, ACM SIGGRAPH Thesis Fast Forward**, *Vancouver, Canada*.

2017 **Best Paper Award, The X International ACM SIGGRAPH Conference on Motion in Games**, *Barcelona, Spain*.

2016-2017 **Graduate Division Fellowship**, *UCLA*.

2016-2017 **Computer Science Dept. Honorarium award for service**, *UCLA*.

2013-2014 **Computer Science Dept. Fellowship for doctoral students**, *UCLA*.

Teaching Experience

Spring 2020 **Introduction to Graphics Programming**, *New Jersey Institute of Technology*.
Introduction to principal topics and key ideas in computer graphics animation and modeling. Includes assignments, and independent study.

Fall, Spr., Win. 2014-2018 **Programming Languages**, *UCLA*.
Basic concepts in design and use of programming languages, including abstraction, modularity, control mechanisms, types, declarations, syntax, and semantics. Study of several different language paradigms: Ocaml, Python, Java, Scheme and Prolog

Spr. 2017 **Software Engineering**, *UCLA*.
Structured programming, program specification, program proving, modularity, abstract data types, composite design, software tools, software control systems, program testing, team programming.

Win. 2016 **Software Construction Lab**, *UCLA*.
Sole Instructor. Fundamentals of open-source and other software tools and environments, used in upper-division computer science courses and in the software industry

Fall 2015 **Computer Science Freshman Seminar**, *UCLA*.
Introduction to principal topics and key ideas in computer science and engineering. Seminar includes assignments, independent study, and writing reports

Talks

Apr. 2020 Bridging the Gap between Physical and Virtual Reality
PIXL seminar talk, Computer Science Department
Princeton University

Nov. 2019 Bridging the Gap between Physical and Virtual Reality
School of Computer Science Weekly Seminar
Interdisciplinary Center Herzliya (IDC)

Nov. 2019 Bridging the Gap between Physical and Virtual Reality
Faculty of Engineering Seminar
Bar Ilan University

Nov. 2019 Wayfair: Finding your perfect home with data and computational interior design
Data Science Initiative
Harvard University

Oct. 2019 Bridging the Gap between Physical and Virtual Reality
Computer Graphics Group Seminar
UMass Amherst

May 2019 Bridging the Gap between Physical and Virtual Reality
Computer Graphics Group Seminar
CSAIL, MIT

Apr. 2019 Bridging the Gap between Physical and Virtual Reality
Guest Lecture
Dept. of Computer and Information Science, Fordham University

Mar. 2019 Bridging the Gap between Physical and Virtual Reality
Colloquia
Dept. of Computer Science, University of Massachusetts Boston

Mar. 2019 Bridging the Gap between Physical and Virtual Reality
CS Seminar
Dept. of Computer Science, Illinois Institute of Technology

Mar. 2019 Bridging the Gap between Physical and Virtual Reality
Research Seminar
Dept. of Computer Science, University of North Carolina at Charlotte

Mar. 2019 Bridging the Gap between Virtual and Physical Worlds
Research Seminar
Digital Worlds Institute, University of Florida

Mar. 2019 Position-Based Multi-Agent Dynamics for Real-Time Crowd Simulation
Guest Lecture
Digital Worlds Institute, University of Florida

Mar. 2019 Powering the Next Generation of Human Learning with Immersive Virtual Environments
Research Seminar
Learning Sciences Cluster, University of Central Florida

Mar. 2019 Bridging the Gap between Physical and Virtual Reality
Research Seminar
Dept. of Computer Science, University of Central Florida

Feb. 2019 Bridging the Gap between Physical and Virtual Reality
Colloquium
Dept. of Computer Science, Old Dominion University

Feb. 2019 Bridging the Gap between Physical and Virtual Reality
Research Presentation
Dept. of Informatics, New Jersey Institute of Technology

Jan. 2019 Introduction to Functional Programming
Guest Lecture
Dept. of Computer Science, Loyola Marymount University

Dec. 2018 A Constraint-Based Approach to Crowd Simulation and Layout Design (Video)
ACM SIGGRAPH Asia Doctoral Consortium
Tokyo, Japan

Nov. 2018 A fast and scalable approach for simulating multi-agent crowds and for creating virtual layouts
Computer Science Colloquium
Dept. of Computer Science, Dartmouth College

Oct. 2018 A fast and scalable approach for simulating multi-agent crowds and for creating virtual layouts
Computer Science Colloquium
Dept. of Computer Science, University of Massachusetts Lowell

Oct. 2018 Gallery Wall Synthesis and Visualization
International Conference on Predictive Applications and APIs (Video)
Boston, MA

Oct. 2018 A fast and scalable approach for simulating multi-agent crowds and for creating virtual layouts
Computer Graphics Colloquium
Dept. of Computer Science, University of Pennsylvania

Aug. 2018 A Constraint-Based Approach to Crowd Simulation and Layout Design
ACM SIGGRAPH Thesis Fast Forward
Vancouver, BC, Canada

Jun. 2018 Simulating virtual crowds with 100,000 agents in real-time on your laptop
Boston Computational Creativity Interest Group
Boston, MA

Mar. 2018 Simulating virtual crowds with 100,000 agents in real-time on your laptop
Visual Computing and Interaction Seminar
Computer Science, Electrical Engineering, Media Arts and Technology (Jointly)
University of California Santa Barbara

Mar. 2018 Simulating virtual crowds with 100,000 agents in real-time
Dept. Seminar Series
Dept. of Computer Science, University of Massachusetts Boston

Mar. 2018 Simulating virtual crowds with 100,000 agents in real-time on your laptop
EECS Technical Seminar Series (Video)
Electrical Engineering and Computer Science, University of California Merced

Feb. 2018 Position-based methods for real-time crowd simulation and modeling applications
Computer Graphics and Visualization group
School of Information and Computer Sciences, University of California Irvine

Feb. 2018 Position-based multi-agent dynamics for real-time crowd simulation and modeling applications
Center for Visual Computing
Dept. of Computer Science and Engineering, University of California San Diego

Dec. 2017 Position-based multi-agent dynamics for real-time crowd simulation
Graphics and Vision Seminar, hosted by Prof. Daniel Cohen-Or
School of Computer Science, Tel Aviv University

Professional Activities

2019 White Paper Contributor, Computing Community Consortium (CCC)
Content Generation for Workforce Training workshop

2018 Reviewer, Engineering Undergraduate Scholarships

2014–2017 Graduate Admissions Committee

2014–2017 Computer Science Dept. Graduate Visiting Day Committee
Led Q&A panels, campus and department overview session

2014–2016 Officer of the Engineering Graduate Student Division Association
Coordinated student events, volunteering, and outreach. Also in-charge of industry collaboration, and industry sponsored events

2014–2016 Acting President of the Computer Science Graduate Student Committee
In charge of outreach, industry collaboration and student events. Coordinated company sponsored tea-time events, for recruiting computer science graduate students

Service

2020 Panelist & Reviewer, NSF SBIR/STTR

2019 Reviewer, Computers & Graphics

2019 Reviewer, IEEE Access

2019 PC Member, Computer Animation and Social Agents (CASA)

2018 Reviewer, Eurographics

2018 Reviewer, ACM SIGGRAPH Asia

2018 Reviewer, Elsevier Applied Mathematical Modelling

2018 Reviewer, Journal of Visualized Experiments

Media

2020 Featured New Facutly,
New Jersey Institute of Technology Magazine, Winter 2020

2018 Best Paper Award at ACM SIGGRAPH Conference on Motion in Games,
UCLA Computer Science News

Selected Graduate Course Work

Graphics	Special Topics in Computer Graphics
	Computer Animation
	Seminar in Advanced Topics in Applied Mathematics
	Artificial Life in Virtual Worlds
Machine Learning	Advanced topics in Machine Learning, Signal Processing and Systems
	AI Animats-based modeling
	AI Automated Reasoning Theory and Applications
	AI Language and Thought
Programming Languages	Types and Programming Languages
	Special Topics in Programming Languages
	Topics in Software Engineering
	Programming Languages Prototyping