A Knights Welcome To: Dr. Tomer Weiss

Date: Monday March 4, 2019

Time: 3:15pm-4:15pm (HEC-356)

Date: Tuesday March 5, 2019

Time: 4:00pm-5:00pm (HEC-356)

(Harris Engineering Building)

Bio: Tomer Weiss recently defended his PhD at the University of California, Los Angeles. He received the Best Paper Award from the ACM SIGGRAPH conference on Motion in Games, for his work on virtual crowd simulation. He was a finalist presenter in both ACM SIGGRAPH Thesis Fast Forward, and the ACM SIGGRAPH Asia Doctoral Symposium in 2018. He received his MS in computer science from UCLA in 2016, and his BSc degree in computer science from Tel Aviv University in 2013. His research interests include computational design, mixed reality, and real-time methods for visual computing. Currently, he is with Wayfair Inc., and is also an affiliated research scientist with the UCLA Computer Graphics & Vision Laboratory directed by Prof. Demetri Terzopoulos.

"Bridging the Gap between Physical and Virtual Reality"

Virtual environments are prevalent and enjoy multiple applications. Novel virtual environment mediums, such as Virtual, Augmented and Mixed Reality (XR), can merge with our physical reality and have the power to revolutionize many fields, including communication, healthcare, and education. Regrettably, current approaches cannot accommodate this evolving front. Bridging this gap requires seamless large-scale virtual content creation and simulation. In this talk, I focus on two essential tasks in virtual environments: interior layout synthesis, and the simulation of crowds of agents. To accomplish these tasks, I introduce a novel, physics-inspired method. Each task is defined in terms of several positional constraints. Positional relationships between interior objects, or individuals in a crowd, are governed by such constraints; e.g. the table should lie at this distance from the chair. Optimizing the set of positions under such constraints allows interactive prototyping of large-scale layouts, which where previously intractable. Additionally, hundreds of thousands of agents can now be simulated in real-time with a laptop computer. These results can be easily integrated into current virtual environment engines, and are also generalizable to other domains. Lastly, I conclude my talk by discussing the wide range of research opportunities in this emerging area.