Data-Driven Geometry Processing - without 3D Data

Abstract:

Much of the current success of deep learning has been driven by massive amounts of curated data, whether annotated and unannotated. Compared to image datasets, developing large-scale 3D datasets is either prohibitively expensive or impractical. In this talk, I will present several works which harness the power of data-driven deep learning for tasks in geometry processing, without any 3D datasets. I will discuss works which reconstruct surfaces from noisy point cloud data without any 3D datasets. In addition, I will demonstrate that it is possible to learn to edit 3D geometry using large image datasets. Bio: Rana Hanocka is an Assistant Professor at the University of Chicago and holds a courtesy appointment at the Toyota Technological Institute at Chicago (TTIC). Rana founded and directs the 3DL (ThreeL) research collective, comprised of enthusiastic researchers passionate about 3D, machine learning, and visual computing. Rana's research interests span computer graphics, computer vision, and machine learning. Rana completed her Ph.D. at Tel Aviv University under the supervision of Daniel Cohen-Or and Raja Giryes. Her Ph.D. research focused on building neural networks for irregular 3D data and applying them to problems in geometry processing.