1077-68-2755 **Erik D. Demaine*** (edemaine@mit.edu), MIT CSAIL, 32 Vassar St., Cambridge, MA 02139.

Recent Results in Computational Geometry.

Computational geometry is the study of algorithms that compute, analyze, and manipulate geometric structures—typically, sets of points, segments, and polygons in 2D or 3D—with guaranteed performance and quality. For example, how can we design optimal origami that folds the smallest possible square of paper into a desired 3D surface? When and how can we accurately reconstruct a 3D surface given just a set of points on the surface measured by a 3D scanner? How can we quickly detect when moving vehicles in a video game collide and thus need their physical reaction to be computed? How can we triangulate an airfoil while guaranteeing that all triangles are close to equilateral, to enable scientific computation? How can we efficiently compute the shortest route from one point on a map to another, and when drawing the map, which city names should we print while avoiding overlaps between the labels? All of these questions have been (at least partially) answered by computational geometry, with mathematical theorems about computational algorithms. This talk aims to sample a breadth of recent results in this exciting field.

Those who find the field interesting and want to see more in depth should check out the SIAM Minisymposium on Computational Geometry (Thursday at 8-11am). (Received September 22, 2011)