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This is a report on a talk given at the Conference of Integral Geometry, Geometric Probability and Convex Bodies in Cagliari, Italy. Computational synthetic geometry deals with methods for realizing abstract geometric objects in concrete vector spaces. This paper describes the nature of this branch of computational geometry in the light of two examples. It also announces additional examples and results obtained recently, for instance a complete classification of all orientable neighborly 2-pseudo-manifolds with 9 vertices.

Reviewer: J.Linhart (Salzburg)

MSC:
52B55 Computational aspects related to convexity
52B70 Polyhedral manifolds
52B40 Matroids in convex geometry (realizations in the context of convex polytopes, convexity in combinatorial structures, etc.)
68U05 Computer graphics; computational geometry (digital and algorithmic aspects)
05B35 Combinatorial aspects of matroids and geometric lattices

Keywords:
embedding of two-manifolds; realizability of oriented matroids; classification of two-manifolds