

1 Euclidean tools

Tool	Arguments	Description
Point	(coordinates)	Create a point using the first applicable rule from the following: <ol style="list-style-type: none"> 1. Create a point on the closest intersection of primitives if there are any. 2. Create a point on the closest geometric primitive if there are any. 3. Create a point at the exact coordinates given by the argument.
Line	(point*, point*)	Draw a line passing through the given points.
Circle	(point, point)	Draw a circle centered at the first point with a radius marked by the second point.
Perpendicular Bisector	(point*, point*)	Draw the perpendicular bisector of two given points.
Angle Bisector	(point*, point, point*)	Draw the axis of an angle, where the second point marks the vertex and the first and the third points lie on its rays.
Perpendicular	(line, point)	Draw a line perpendicular to the line passing through the point.
Parallel	(line, point)	Draw a line parallel to the line passing through the point.
Compass	(point*, point*, point)	Draw a circle with a center in the third point and a radius given by the distance between the first two points.

Table 1: Tools available for construction steps in Euclidean. The asterisk denotes interchangeable arguments.

2 Additional qualitative examples

2.1 Level *Gamma-08*

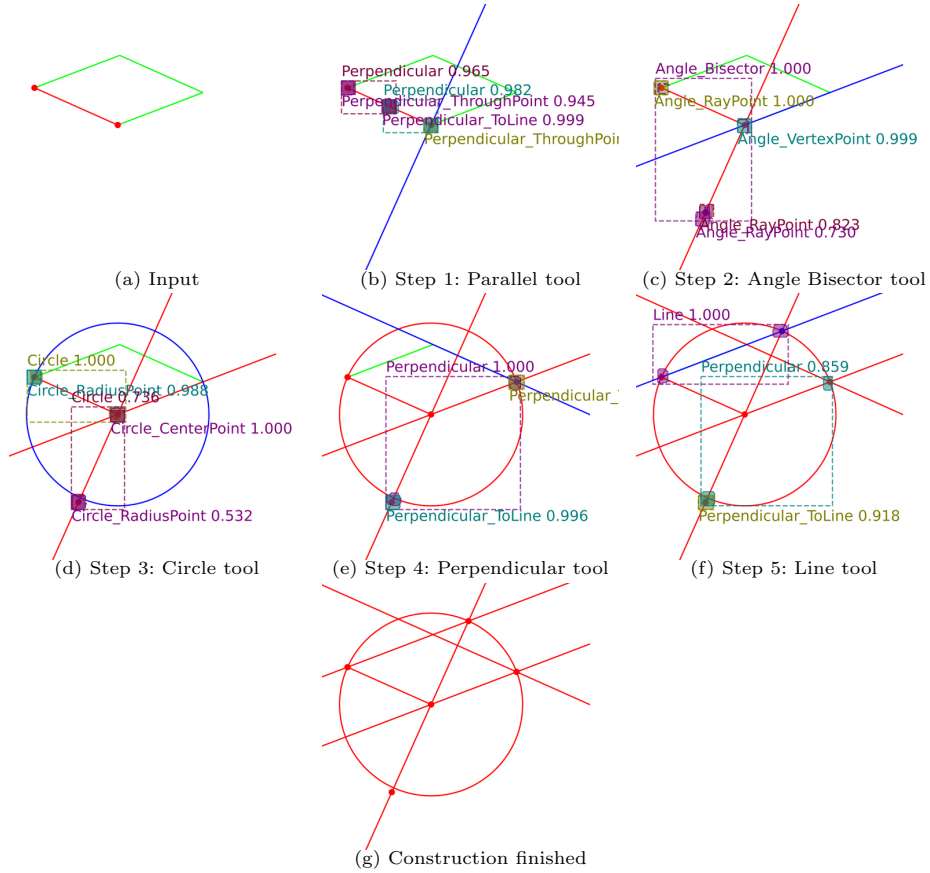


Fig. 1: Example construction of Euclidean level *Gamma-08* (construct a rhombus with the given side and an angle of 45° in a vertex). The figure contains 5 steps of the construction. (a) Definition of the problem. (b-f) Construction steps containing Mask R-CNN detections of possible steps. In each subfigure, the red color denotes the current state of the construction, green the remaining goals, blue the geometric primitive proposed by the detection, and other colors mark the prediction masks, bounding boxes, classes and scores for the predicted action.

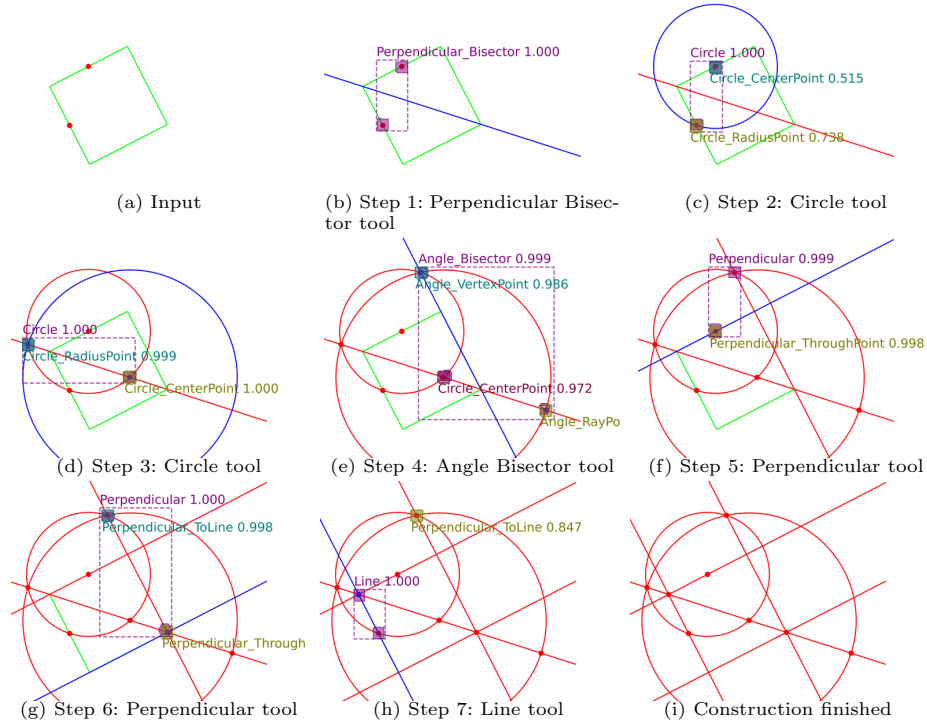
2.2 Level *Delta-10*

Fig. 2: Example construction of Euclidean level *Delta-10* (construct a square by adjacent side midpoints). The figure contains 7 steps of the construction. (a) Definition of the problem. (b-h) Construction steps containing Mask R-CNN detections of possible steps. In each subfigure, the red color denotes the current state of the construction, green the remaining goals, blue the geometric primitive proposed by the detection, and other colors mark the prediction masks, bounding boxes, classes and scores for the predicted action hypotheses.

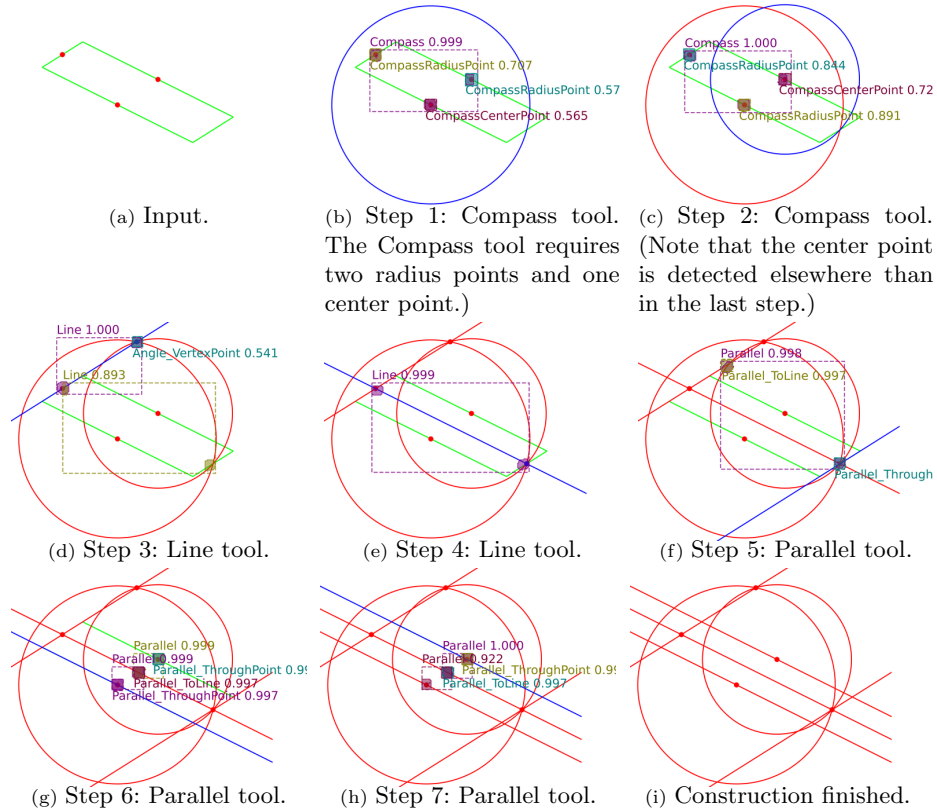
2.3 Level *Zeta-12*

Fig. 3: Example construction of Euclidean level *Zeta-12* (construct a parallelogram given three of the midpoints). The figure contains 7 steps of the construction. (a) Definition of the problem. (b-h) Construction steps containing Mask R-CNN detections of possible steps. In each subfigure, the red color denotes the current state of the construction, green the remaining goals, blue the geometric primitive proposed by the detection, and other colors mark the prediction masks, bounding boxes, classes and scores for the predicted action hypotheses.