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## An approach to computing direction relations between separated object groups

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**Abstract.** Direction relations between object groups play an important role in qualitative spatial reasoning, spatial computation and spatial recognition. However, none of existing models can be used to compute direction relations between object groups. To fill this gap, an approach to computing direction relations between separated object groups is proposed in this paper, which is theoretically based on gestalt principles and the idea of multi-directions. The approach firstly triangulates the two object groups, and then it constructs the Voronoi diagram between the two groups using the triangular network. After this, the normal of each Voronoi edge is calculated, and the quantitative expression of the direction relations is constructed. Finally, the quantitative direction relations are transformed into qualitative ones. The psychological experiments show that the proposed approach can obtain direction relations both between two single objects and between two object groups, and the results are correct from the point of view of spatial cognition.

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