

Graph-based Methods in Computer Vision: Recent Advances

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Abstract

Graphs and graph-based representations have long been an important tool in computer vision and pattern recognition, especially because of their representational power and flexibility. There is now a renewed interest toward explicitly formulating computer vision problems as graph problems. This is particularly advantageous because it allows vision problems to be cast in a pure, abstract setting with solid theoretical underpinnings and also permits access to the full arsenal of graph algorithms developed in computer science and operations research. In this talk I'll describe some recent developments in graph-theoretic methods which allow us to address within a unified and principled framework a number of classical computer vision problems. These include image geo-localization, image retrieval, multi-camera tracking, and person re-identification. The concepts discussed here have intriguing connections with optimization theory, game theory and dynamical systems theory, and can be applied to weighted graphs, digraphs and hypergraphs alike.

References

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