Partial Extensions and Simultaneous Embeddings

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Extending partial solutions is often more difficult than to build solutions from scratch. Somewhat surprisingly, in case of geometric representations of graphs, in most of the cases when the computationally complexity of the problem is known, the compelxity is the same as of the plain recognition problem. Another closely related problem are simultaneous representations of graphs. Closely related, but not always of the same computational complexity. We will survey the known results, and compare them, for several well known classes of graphs and types of embedding in the plane.