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Adam Volk* (volka1@udayton.edu) and **Joshua Mireles**. *Gridline Graphs in Higher Dimensions*. Preliminary report.

A gridline graph is a graph G whose vertices can be realized in \mathbb{R}^2 in such a way that the vertices are adjacent if and only if they lie on a vertical or horizontal line, in other words they share a coordinate. These graphs can be characterized as line graphs of bipartite graphs and as diamond, claw, and odd-hole free graphs. We generalize gridline graphs to n dimensions by letting vertices be adjacent whenever they line on the same hyperplane, that is they share *at least one* coordinate. We investigate how characterizations of the 2-dimensional gridline graphs generalize to n dimensions and provide more specific results for the case where $n = 3$. This research was conducted as part of the 2014 REU program at Grand Valley State University. (Received August 19, 2014)