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**TRENT MARBACH**, Toronto Metropolitan University

*Limited visibility localization*

A modification to the typical Cops and Robbers game limits the cops' knowledge by introducing a restriction known as *k-visibility*. This restriction is that the cops only know the robber's location if some cop is distance at most  $k$  from the robber. Previous work has primarily focused on the case with  $k = 0$  and  $k = 1$ , although recent work has explored the general case. We introduce the *k-visibility Localization game*, focusing on the case  $k = 1$ . Play in this variant naturally splits up into two phases. For a graph  $G$ , we write  $\text{prox}_1(G)$  to indicate the minimum number of cops required to see the robber on  $G$  and  $\zeta_1(G)$  to indicate the minimum number of cops required to capture the robber on  $G$ .

The results that we present will show connections between these new graph parameters and the previously studied graph isoperimetric parameters, which are two parameters that bound a subgraph's boundary with respect to the number of vertices in the subgraph. In particular, we introduce a *h-index* for the graph isoperimetric parameter, which provides an alternate view of how 'large' the graph isoperimetric parameter is for a given graph. We then show how previously published results on the graph isoperimetric problem can be utilized using the *h-index* idea to give lower bounds on  $\zeta_1(G)$  and  $\text{prox}_1(G)$  for several graph families.