

## MAX FILTERING

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Machine learning algorithms are designed for data in Euclidean space. When naively representing data in a Euclidean space  $V$ , there is often a nontrivial group  $G$  of isometries such that different members of a common  $G$ -orbit represent the same data point. To properly model such data, we want to map the set  $V/G$  of orbits into Euclidean space in a way that is bilipschitz in the quotient metric. In this talk, we take inspiration from an inverse problem called phase retrieval to find a large and flexible class of bilipschitz invariants that we call max filter banks. We discuss how max filter banks perform in theory and in practice, and we conclude with several open problems.

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