𝟭. 𝗖𝗼𝘀𝗶𝗻𝗲 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
Measures the angle between two vectors. Ignores magnitude—great for directional similarity.  
  
𝟮. 𝗘𝘂𝗰𝗹𝗶𝗱𝗲𝗮𝗻 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Straight-line distance between two points. Equivalent to the L2 norm—most intuitive.  
  
𝟯. 𝗠𝗮𝗵𝗮𝗹𝗮𝗻𝗼𝗯𝗶𝘀 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Adjusts for variance and correlation. Uses the covariance matrix—great for multivariate data.  
  
𝟰. 𝗛𝗲𝗹𝗹𝗶𝗻𝗴𝗲𝗿 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Quantifies dissimilarity between probability distributions. Always between 0 and 1.  
  
𝟱. 𝗝𝗮𝗰𝗰𝗮𝗿𝗱 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Measures dissimilarity between sets. Based on intersection over union.  
  
𝟲. 𝗠𝗮𝗻𝗵𝗮𝘁𝘁𝗮𝗻 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Sum of absolute differences. Also called L1 norm—great for grid-based tasks.  
  
𝟳. 𝗖𝗼𝗿𝗿𝗲𝗹𝗮𝘁𝗶𝗼𝗻 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Based on how strongly variables are linearly related. Derived from Pearson correlation.  
  
𝟴. 𝗗𝗶𝗰𝗲 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Variant of Jaccard with more weight on common elements. Used in image segmentation.  
  
𝟵. 𝗛𝗮𝗺𝗺𝗶𝗻𝗴 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Number of mismatched positions. Best for categorical or binary strings.   
  
𝟭𝟬. 𝗖𝗵𝗲𝗯𝘆𝘀𝗵𝗲𝘃 𝗗𝗶𝘀𝘁𝗮𝗻𝗰𝗲  
↳ Maximum absolute difference across dimensions. Think chessboard king's move.  
  
⚠️ 𝗤𝘂𝗶𝗰𝗸 𝗿𝗲𝗺𝗶𝗻𝗱𝗲𝗿: Not all of these are “true” distances.  
To qualify as a distance metric, it must meet 4 rules:  
  
 • Non-negativity  
 • Identity of indiscernibles  
 • Symmetry  
 • Triangle inequality