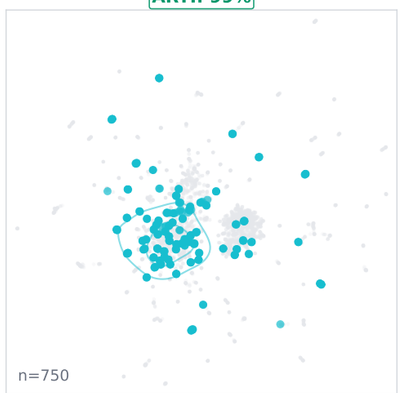
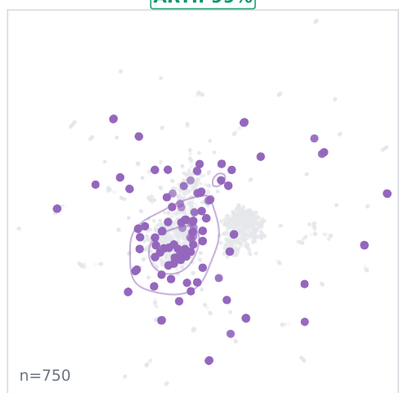
Geometric Signatures of 10 Reasoning Types (384D → UMAP 2D)

Strong geometric signal (>90%)

Counterfactual
ARTI: 99%

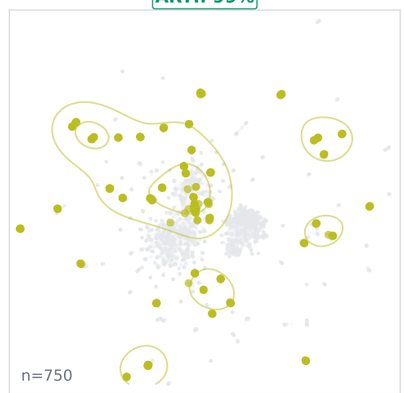


Analogy
ARTI: 99%

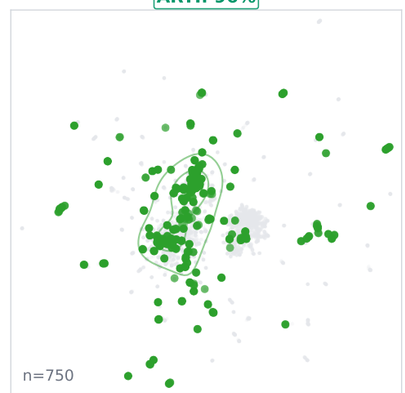


Systemic Cause
ARTI: 99%

Abduction
ARTI: 99%

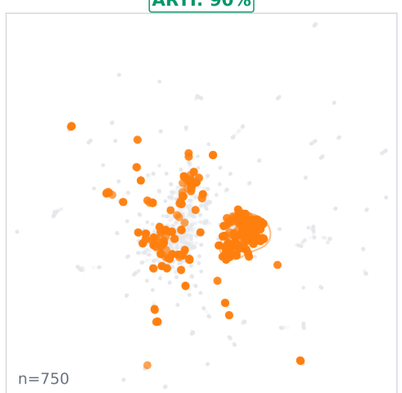


Induction
ARTI: 96%

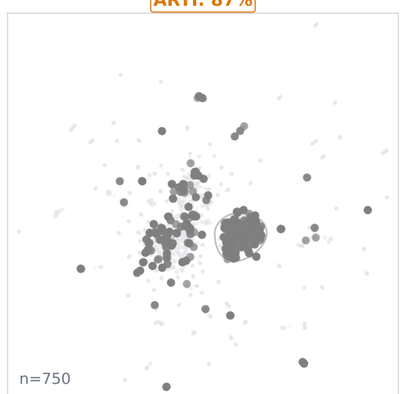


Weaker / overlapping signal (<90%)

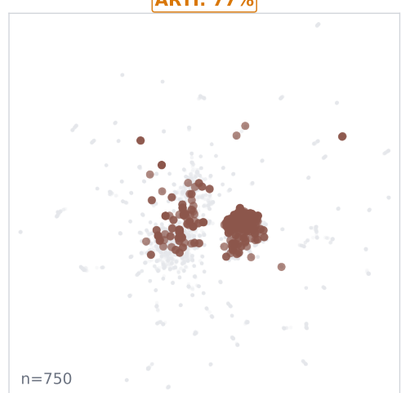
Conservation
ARTI: 90%



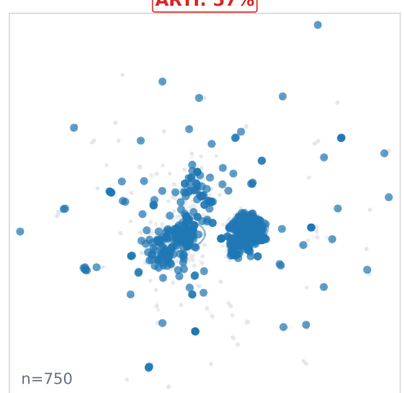
Decomposition
ARTI: 87%



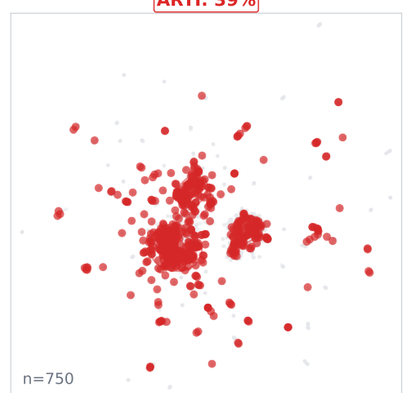
Behavioral Cause
ARTI: 77%



Deduction
ARTI: 57%



Physical Cause
ARTI: 39%



Each panel highlights one reasoning type (color) against all others (gray). Density contours show cluster shape.
Top row: types with strong, well-separated geometric clusters (ARTI >90%). Bottom row: types with diffuse or overlapping geometry.