Biological Analogies Dataset Generation

Dataset Organization and Interaction

Exoskeleton-based Mechanisms | Blubber-based Mechanisms
Beak designs | Joint designs

Mechanism Clusters for "Manage Impact"

? Explain 👍👎 Compare
⚡ Combine 🤔 Critique

Step 1. Human Expert-Curated Seed Inspirations (AskNature.org)

From Unstructured AskNature Blog Posts to Structured Problem-Mechanism Schemas

Step 2 [Iterate]. Structured Seed Expansion with LLMs

Organism taxonomy trees are iteratively constructed and expanded by balancing (**a**) breadth- and (**b**) depth-focused strategies

Step 3. Semantic Clustering of Mechanisms

Mechanisms are embedded into high-dimensional semantic vectors, are grouped by problems, and clustered

Step 4. Interacting with Single or Pair of Mechanisms

Users can see detailed explanations of a mechanism (**Explain**), **Compare** or **Combine** two Mechanisms, and receive feedback on their own ideas (**Critique**)