

# Aligning Biomedical Ontologies

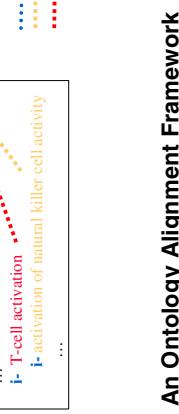
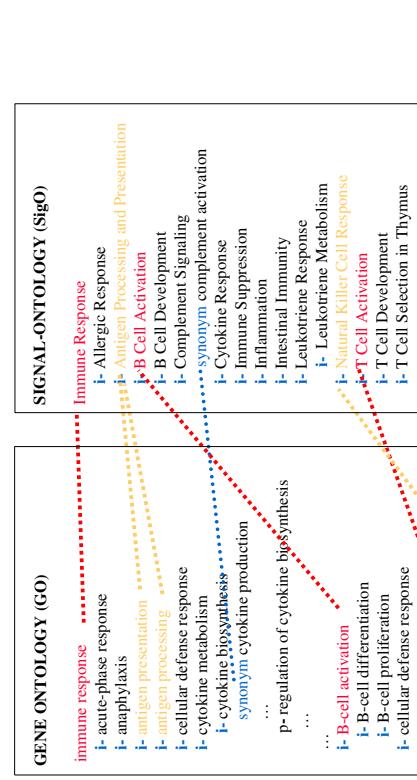
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Due to the recent explosion of the amount of on-line accessible biomedical data and tools, finding and retrieving the relevant information is not an easy task. The vision of a Semantic Web for life sciences alleviates these difficulties. A key technology for the Semantic Web are ontologies. In recent years many biomedical ontologies have been developed and many of these ontologies contain overlapping information. Often we would therefore want to be able to use multiple ontologies. To obtain good results, we need to find the relationships between terms in the different ontologies, i.e. we need to align them.

## Aligning Ontologies

- Aligning ontologies is to define the relations between the terms in different ontologies



## An Ontology Alignment Framework

- Use as a basis for building ontology alignment systems

- Provide support for experimenting with different alignment strategies and their combinations

## SAMBO System for Aligning and Merging Biomedical Ontologies

<http://www.ida.liu.se/~iislab/projects/SAMBO/>

The screenshot shows the SAMBO interface with the following sections:

- Left Panel:** Shows the ontologies being aligned: **nose\_Mesh** and **ear\_Mesh**.
- Middle Panel:** Displays the alignment results for the term **nose**. It lists various matches and provides a detailed view of one match, including definitions and part-of relationships.
- Right Panel:** Shows the search interface for **nose\_Mesh**, with fields for term, search type, and search mode.

## KitAMO toolKit for Aligning and Merging Ontologies

The screenshot shows the KitAMO interface with the following sections:

- Left Panel:** Shows the ontologies being aligned: **ear\_Mesh** and **nose\_Mesh**.
- Middle Panel:** Displays the alignment results for the term **nose**. It lists various matches and provides a detailed view of one match, including definitions and part-of relationships.
- Right Panel:** Shows the search interface for **nose\_Mesh**, with fields for term, search type, and search mode.

<http://www.ida.liu.se/~iislab/projects/KitAMO/>

for comparative evaluation of the non-interactive alignment components, including alignment algorithms, combination algorithms and filters.

The screenshot shows the KitAMO Performance interface with a table titled "Summary Value Table - Microsoft Internet Explorer provided by IUA". The table compares different alignment methods (UMLS Search, TerminN, FuzzySearch, BayesLearning) across various metrics (F1, P, R, W, TPR, FNR, FDR, Specificity, Sensitivity, Coverage, Recall, Precision, Accuracy, F1Score, F2Score, F3Score, F4Score, F5Score, F6Score, F7Score, F8Score, F9Score, F10Score, F11Score, F12Score, F13Score, F14Score, F15Score, F16Score, F17Score, F18Score, F19Score, F20Score, F21Score, F22Score, F23Score, F24Score, F25Score, F26Score, F27Score, F28Score, F29Score, F30Score, F31Score, F32Score, F33Score, F34Score, F35Score, F36Score, F37Score, F38Score, F39Score, F40Score, F41Score, F42Score, F43Score, F44Score, F45Score, F46Score, F47Score, F48Score, F49Score, F50Score, F51Score, F52Score, F53Score, F54Score, F55Score, F56Score, F57Score, F58Score, F59Score, F60Score, F61Score, F62Score, F63Score, F64Score, F65Score, F66Score, F67Score, F68Score, F69Score, F70Score, F71Score, F72Score, F73Score, F74Score, F75Score, F76Score, F77Score, F78Score, F79Score, 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