multiple ontologies will have to be combined. This raises the problem of ontology integration (also called ontology alignment or ontology mapping). Because of its crucial nature, this problem has received wide attention in the research community in recent years.

Current approaches to ontology mapping deploy a whole host of different methods, coming from very different areas. We distinguish linguistic, statistical, structural, and logical methods.

7.5.1 Linguistic Methods

The most basic methods try to exploit the linguistic labels attached to the concepts in source and target ontology in order to discover potential matches. This can be as simple as basic stemming techniques or calculating Hamming distances, or it can use specialized domain knowledge. An example of the latter would be that the difference between *Diabetes Melitus type I* and *Diabetes Melitus type II* is not a negligible difference to be removed by a small Hamming distance.

7.5.2 Statistical Methods

Instead of using the linguistic labels of concepts, other methods use *instance data* to determine correspondences between concepts. If there is a significant statistical correlation between the instances of a source concept and a target concept, there is reason to believe that these concepts are strongly related (by a subsumption relation or perhaps even an equivalence relation). These approaches of course rely on the availability of a sufficiently large corpus of instances that are classified in both the source and the target ontologies.