

A Appendices

A.1 Further Examples

Figure 2 provides an example of the recognition system. We identify each of the parsing steps for the example “*probable viral infection*”, containing three different mentions: *viral infection* corresponding to a probable, pathology (mention 1), a pathology type (mention 2) and a pathology of the infectious kind (mention 3). In this example all mentions coincide in the same span. It is interesting to notice that the word *probable* gives rise to a modifier type class but does not contain it, this behaviour is context dependent and difficult to model when looking only at the words in the buffer and the word stack since *probable* does not exist in neither when the mention occurs.

	WORD STACK	MENTION STACK	ACTION	BUFFER
1	∅	∅	OUT	probable viral infection
2	∅	probable	TRANSITION(probable)	viral infection
3	∅	pathology, probable	TRANSITION(pathology)	viral infection
4	∅	pathology>infectious,pathology, probable	TRANSITION(pathology>infectious)	viral infection
5	viral	pathology>infectious,pathology, probable	SHIFT	infection
6	viral, infection	pathology>infectious,pathology, probable	SHIFT	∅
7	viral, infection	pathology, probable	REDUCE(pathology>infectious)	∅
8	viral, infection	probable	REDUCE(pathology)	∅
9	∅	∅	REDUCE(probable)	∅

Figure 2: Transition-shift-reduce mechanism for hierarchical mentions. *probable* reflects the existence of a probable disease, and the corresponding entity *viral infection* is classified with the additional label *probable*. The example shows up to 2 levels of hierarchy (>), and 3 levels of nested mentions (represented by consecutive transitions).