Recently quantum probability methods have shown some promise in Natural Language Processing tasks. In particular, the Word Sense Disambiguation seems to be amenable to an approach based on Quantum Probability Theory. The thesis will explore if this statement holds water. To this effect, the student will test traditional NLP methods on annotated corpora and techniques inspired by the Quantum Probability Theory. At the master level, the student will try to improve the basic quantum algorithm. At the bachelor level, the student will implement one of the basic WSD algorithms and tune the already implemented Quantum based one. The thesis should include a thorough evaluation procedure.