Google Translate does not apply grammatical rules, since its algorithms are based on statistical analysis rather than traditional rule-based analysis. Indeed, the system's original creator, Franz Josef Och, the head of Google's Machine Translation group, has criticized the effectiveness of rule-based algorithms in favor of empirical approaches (Och, 2009).

2.9.1. Google's Approach

Although Google won an international competition for English-Arabic and English-Chinese Machine Translation, translated texts can often include apparently absurd and obvious errors. This is due to the fact that *Google Translate* applies a Statistical Machine Translation approach (SMT) rather than a traditional approach. Its approach is summarized in their website as:

> When *Google Translate* generates a translation, it looks for patterns in hundreds of millions of documents to help decide on the best translation for you. By detecting patterns in documents that have already been translated by human translators, *Google Translate* can make intelligent guesses as to what an appropriate translation should be. This process of seeking patterns in large amounts of text is called "Statistical Machine Translation". Since the translations are generated by machines, not all translations will be perfect. The more human-translated documents that *Google Translate* can analyze in a specific language, the better the translation quality will be. This is why translation accuracy will sometimes vary across languages.

Google Translate has been chosen in this research because I find myself in agreement with Aiken and others in many aspects. First, it is used more frequently, provides more language-pair combinations, and is probably more accurate overall (Aiken & Ghosh, 2009; Och, 2009). In addition, one study (Aiken, et al., 2009) compared four systems and found that *Google Translate* was best, followed by *Yahoo*, *X10*, and *Applied Language*. Finally, an NIST comparison of 22 MT systems in 2005 (many not free or Web-based) found that *Google Translate* was