

point out that compared to standard synonym-based steganography methods there is very little chance of the semantic meaning of the cover-text being lost and there is a low risk of detection, in particular in countries where English (neither American or British) is not the native language as the mix of American and British English words will not attract as much attention.

Shirali-Shahreza and Shirali-Shahreza have also published a second method of text steganography [33], which makes use of the abbreviations used in "text speak". For example the replacement of the word "sorry" with "sry" or "see" with "c". Using the same principle as the American-British method, they use the full word to hide a '0', and the abbreviation to hide a '1'. This method is effective against detection if it is used in text where abbreviations are common (such as SMS messages or instant messaging), but will be easily detected if it is used in a text medium where abbreviations are not common.

Igor Bolshakov [2] produced an algorithm for synonym-based substitution using the theory of transitive closure to build his synsets (sets of synonyms). The transitive closure was applied to overlapping synsets which removes ambiguity when decoding. For example, the overlapping synsets for the words "paper" and "composition" are {'authorship', 'composition', 'paper', 'penning', 'report', 'theme', 'writing'}. The main issue with this approach is that all of the words in this set need to be considered. The set could be very large, and some of the words may not be appropriate for the word in most cases.

Topkara et al. [35] have proposed a synonym substitution based algorithm for the specific purpose of watermarking text documents. The synonyms to be chosen are decided upon by calculating their distortion effect (the effect of making the substitution on the "value" of the document) with a goal of maximising the distortion (within an acceptable limit), and also their resilience to detection. More ambiguous words, such as "bank" which has multiple different senses, are preferred as they are less likely to not fit into the text.

Chang and Clark's [4] approach is to use the idea of synonym substitution and vertex colour coding. The algorithm generates a coloured graph of the synonyms of the word and then uses this to choose the synonyms, which are tested using n-gram frequency counts from the Google Web n-gram corpus [6]. The removes any synonyms which would fail statistical analysis. The synonyms are chosen using this graph, and the synonym that is chosen depends on the data to hide. To retrieve data this graph is again constructed for each word, which should be the same graph as for the original word, and then the word's position in the graph determines the hidden data. They achieve a bitrate of just over one bit per standard newspaper sentence, which is roughly the aim of the algorithm in this project.