Towards Detecting Deception using K-Nearest Neighbour Model

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 181
Number 20

Year of Publication: 2018

Authors:

Owolafe Otasowie, Alese Bonifacem K., Adewale Olumide S.

10.5120/ijca2018917846

Abstract

Security over the years remains a major concern of all especially the law enforcement agencies. One way of arresting this concern is to be able to reliably detecting deception. Detecting deception remains a difficult task as no perfect method has been found for the detection. Past researches made use of a single cue (verbal or nonverbal), it was found that examining combinations of cues will detect deception better than examining a single cue. Since no single verbal or nonverbal cue is able to successfully detect deception the research proposes to use both the verbal and nonverbal cues to detect deception. Therefore, this research aims to develop a KNN model for classifying the extracted verbal, nonverbal and VerbNon features as deceptive or truthful. The system extracted desired features from the dataset of Perez-Rosas. The verbal cues capture the speech of the suspect while the nonverbal cues capture the facial expressions of the suspect. The verbal cues include the voice pitch (in terms of variations), frequency perturbation also known as jitters, pauses (voice or silent), and speechrate (is defined as the rate at which the suspect is speaking). The Praat (a tool for speech analysis) was used in
extracting all the verbal cues. The nonverbal features were extracted using the Active Shape Model (ASM). The work was implemented in 2015a MatLab. The classification was done using KNN model. KNN performed well with VerbNon dataset with a percentage score of 96.2%.

References

Workshop on Computational Approaches to Deception Detection. Avignon, France. 15-22.

Index Terms

Computer Science  Artificial Intelligence

Keywords

VerbNon, Praat, ASM, KNN, Deception