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Caught in a Lie:

**Automated Deception Detection System Using Human Facial Cues
and Facial Chirality**

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Abstract

Deception detection is an important task carried out in high stake situations like suspect interrogations. Criminal investigations are solely dependent on a suspect's truthful confession for a case to be solved. The only way to make a suspect confess is by conducting a suspect interrogation with evidence. Detectives face difficulties in detecting deception manually due to various reasons such as excessive time requirement, not specialized in deception detection, judgements become human biased, necessity of more detective resources. Due to these reasons manual deception detection has become a hard process to conduct. Therefore, researchers have identified different automated deception detection approaches. These approaches also have many limitations which leads to inaccurate and invalid results.

There is a necessity of an accurate, valid and high performing automated deception detection system. For this reason, **Caught in a Lie**: an automated deception detection system using human facial cues and facial chirality has been introduced. The system takes nonverbal indicators of humans such as facial cues and facial chirality into account and detect deception of interrogation videos. Human face is a display of emotions people feel. Hence, it is hard to hide or change non-verbal indicators. That is the main reason non-verbal indicators were focused in deception detection on the system **Caught in a Lie**. To the best of the author's knowledge, a Facial Chirality deep learning model has not been used for any automated deception detection systems up to this point. However, manual deception detection focuses on facial chirality which gives accurate results.

The proposed system detects deception of interrogation videos accurately and efficiently by outputting the deceptive and truthful percentage of the suspect as well as which indicators caused the deceptiveness or truthfulness of the suspect. Therefore, the **Caught in a Lie** system is a novel automated deception detection system which is the first to focus on facial chirality when detecting deception. This facial chirality model will assist future researchers of the domain or different domains which require facial chirality.

Keywords: Deception Detection, Facial Chirality, Facial Cues, Interrogations, Non-Verbal Indicators, Criminal Investigations, Deep Learning Model