



Health, Medicine and Biotechnology

## Detecting High Stress in Interviews and Text

System to estimate stress, emotional volatility, and conflict

When a subject is interviewed, some of their statements may be inaccurate, or even deceptive, because they have incomplete information, they are telling only part of the truth, or the subject is fabricating an answer that they know is false. When an interview subject is habitually issuing statements that are known to be false, or only partly true, emotional and/or intellectual conflicts often arise within the subject, and these conflicts may become manifest by inconsistencies in use of different parts of speech or in logical relationships between statements. Identification of these subtle inconsistencies is more difficult, and less straightforward, than identification of factual inconsistencies. This invention provides an automated, computer-based method to detect deception, high stress, or internal conflict in oral and written responses by a subject being interrogated. This analysis can be used to indicate an interview subjects work background, profession, geographic region of upbringing, or social background.

### BENEFITS

- Method is computer-based and automated
- Detects high stress, emotional volatility, and internal conflict
- Estimates deception by interview subjects by speech and/or text analyses
- Uses multiple analyses with supporting algorithms

technology solution



# NASA Technology Transfer Program

Bringing NASA Technology Down to Earth

## THE TECHNOLOGY

This system estimates whether a subject of interrogation is likely to be experiencing high stress, emotional volatility, and/or internal conflict in the subjects responses to an interviewers questions. The system applies one or more of four procedures, a first statistical analysis, a second statistical analysis, a third analysis and a heat map analysis, to identify one or more documents containing the subjects responses. Several statistical analyses are applied here, individually or in combination, based on selected emotional dimensions that are represented by related groups of words and phrases (anger, sadness, depression, etc.) Statistical indices are developed and applied for each emotional dimension to identify particular responses within one or more documents that should be revisited, optionally to identify topics that should be explored in an additional interview where the subject may have been practicing deception. Words in the documents are characterized in terms of dimensions representing different classes of emotions and states of mind, in which the subjects responses that manifest high stress, emotional volatility and/or internal conflict are identified. A heat map visually displays the dimensions manifested by the subjects responses in different colors, textures,geometric shapes or other visually distinguishable indicia.



The invention provides an automated, computer-based method to detect deception, high stress, or internal conflict in oral and written responses by a subject being interviewed/interrogated.

## APPLICATIONS

The technology has several potential applications:

- Criminal interrogations
- Intelligence gathering
- Employment screening
- Mental health assessment
- Identification of social networking users
- Supplement to polygraph testing

## PUBLICATIONS

Patent No: 8,337,208

National Aeronautics and Space Administration

**Technology Partnerships Office**

**Ames Research Center**

MS 202A-3

Moffett Field, CA 94035

855-627-2249

ARC-TechTransfer@mail.nasa.gov

<http://technology.nasa.gov/>

**www.nasa.gov**

NP-2015-02-1426-HQ

NASA's Technology Transfer Program pursues the widest possible applications of agency technology to benefit US citizens. Through partnerships and licensing agreements with industry, the program ensures that NASA's investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life.

ARC-16407-1

