



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. The subject's use of particular language, including colloquialisms and word order in the subject's asserted home region, and knowledge of an asserted line of work, are also analyzed. This analysis can be used to indicate an interview subject's 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 opportunity

Detecting High Stress in Interviews and Text: Technology Detail

This system estimates whether a subject of interrogation is likely to be experiencing high stress, emotional volatility, and/or internal conflict in the subject's responses to an interviewer's 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 subject's 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 subject's responses that manifest high stress, emotional volatility and/or internal conflict are identified. A heat map visually displays the dimensions manifested by the subject's responses in different colors, textures, geometric shapes or other visually distinguishable indicia.

APPLICATIONS

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



Patents

This technology has been patented (U.S. Patent 8,337,208).
Reference: ARC-16407-1.

Licensing and Partnering Opportunities

NASA's Technology Transfer Program seeks to transfer this technology out of NASA's space program to benefit U.S. industry. NASA invites companies to inquire about licensing possibilities for this technology for commercial applications.

Learn More

For more information on this technology, and to discuss licensing and partnering opportunities, please contact:

Technology Partnerships Division
NASA Ames Research Center
1-855-NASA-BIZ (1-855-6272-249)

sumedha.garud@nasa.gov

Visit our website at <http://technology.arc.nasa.gov>.

