Charlatanry in Forensic Speech Science

A Problem to be Taken Seriously

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Background: Polygraphs

- Estimated 61% accuracy
- Subject to countermeasures
- US court admissibility: up to individual jurisdictions
- Not admissible in Germany, Canada, Israel, India
- Voice-based lie detection is newer and less regulated

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SCIENCE!!!

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- ▶ *Diogenes* Lantern: Only sensitive at 20-40Hz range

Reliability Studies

- ▶ Damphousse et al. (2007)
- ▶ Oklahoma County Jail drug arrestees
- ▶ Ground truth known from drug test
- ▶ No support for VSA found
- ▶ Poor inter-user reliability
- ▶ Reliability vs. Validity

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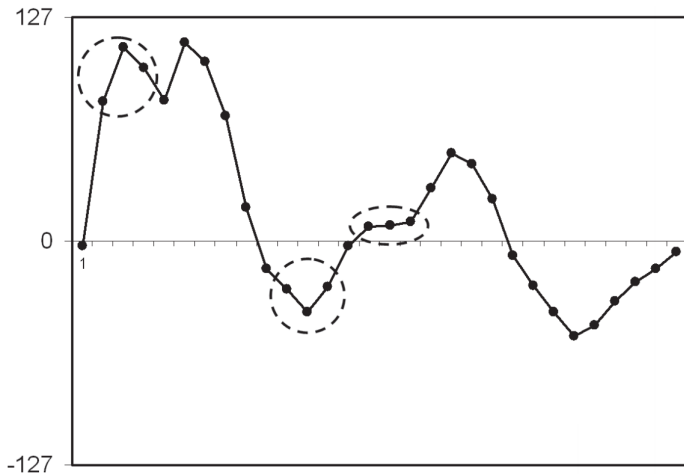- Patented, cutting-edge technology....

Nemesysco LVA

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Nemesysco LVA

- ▶ 500 lines of Visual Basic
- ▶ Computes statistics on various meaningless sampling artifacts

Thorns and Plateaus

Variable Definitions

Table 1: Variable descriptions (modified from Haddad et al. 2002)

Variable	As described to the user	As defined in the program
SPT	A numeric value describing the relatively high frequency range. Vericator associates this value with emotional stress level	The average number of thorns
SPJ	A numeric value describing the relatively low frequency range. Vericator associates this value with cognitive stress level	The average number of plateaus per sample
JQ	A numeric value describing the distribution uniformity of the relativity low frequency range. Vericator associates this value with global stress level	The standard error of plateau length
AVJ	A numeric value describing the average range of the relativity low frequency range. Vericator associates this value with thinking level	The average plateau length

Use

- ▶ Insurance companies
- ▶ Banks
- ▶ UK Department for Work and Pensions
- ▶ The "Bogus Pipeline Effect"

Afterword

- *Nemesysco* threatens lawsuit
- IJSLL retracts the article
- Even more publicity: Language Log, Wikipedia, Reddit, Slashdot, ...