Emotions and EMG measures of facial muscles in interactive contexts

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User experience studies and emotion recognition

EMG of facial muscles and measurement of emotions in HCI

Theories of emotion
As technology matured, interactive products became not only more useful and usable, but also fashionable, fascinating things to desire.

... practitioners and researchers alike, seem to readily embrace the notion of UX as a viable alternative to traditional HCI.

Hassenzahl & Tractinsky, 2006
Emotions as one important part of the user experience

Need for methods to study/evaluate emotional user reactions while using an interactive system
A theory driven approach to explore methods to measure emotions in interactive contexts

- Multi-component models of emotions (e.g. Scherer, 1984)
- The Face plays a role for the expressive component
- EMG measures of facial muscles as one way to measure this component
EMG responses from the *zygomaticus major* and *corrugator supercilii* muscle sites that control smiling and frowning.

Two different simulations of a mobile phone to induce different emotional experiences: one was designed usable and the other one had various usability flaws.

Analyses of correlations with other components and differences between conditions.

Data form the *corrugator supercilii* is consistent with presumed differences and connections to other components, not for *zygomaticus major* (Lang et al., 1993).

From ‘Measuring Multiple Components of Emotions in Interactive Contexts’ (Poster No. 161)
Theories of emotion

Hint for future measurement applications

- Discrete vs. dimensional approaches to emotion structure (Peter & Herbon, 2006)
- Some measurement methods are connected to specific emotion theories
  - FACS → discrete approach
  - EMG → dimensional approach
- Important for the connection to other measurement approaches
Summary

- Facial information to measure emotional aspects of the user experience

- Expressive component of emotions measured with EMG measures: method and results

- Combination of emotion theories and measurement methods
Thank you!

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