

Final Report Summary

**The Feasibility of Developing a Real-Time Embedded
Implementation of Emotion Recognition Technology.**

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The project was a collaborative effort between Affective Media Ltd. and ISLI, to test the feasibility of developing a real-time embedded implementation of Affective Media's emotion recognition technology.

Affective Media's technology allows systems to recognise, understand and respond to human emotions. Emotion is fundamental to human experience, influencing our everyday actions and decisions. However human emotion has largely been ignored by developers because it is difficult to measure and understand. Affective Media builds on latest thinking in speech analytics, psychology and interactive system design to create systems which react intelligently to human emotion. Recognising human emotion and responding appropriately can support call centre operations and interfaces such as avatars. Interactive voice response (IVR) systems can automatically detect caller frustration allowing calls to be answered by empathically trained agents. Overall trends for the operation can be tracked showing the ability of each agent to respond to caller emotion, times of day where the agents ability to respond is better or worse, correlation of agent emotional response to quality of call and outcome (sale), measuring customer satisfaction and identifying training needs for agents.

In order to be able to apply the technology to the automotive and toy markets, it is necessary to produce an embedded, real-time implementation of the technology. The TTOM project was created to examine the feasibility of this, and identify the changes required to the emotion engine to achieve this aim. In addition, reducing the computational requirements will have a positive benefit for call centre applications, by increasing the number of concurrent calls that a single system can handle.

As the partner in this project, ISLI contributed its expertise in algorithm design, system architecture and software development.

Project Outcomes

The project studied the main algorithms and processes employed in analysing the emotion content of speech. Alternative, less computationally intensive algorithms were suggested and trialled, and estimates of the likely performance and resource requirements were made.

The project has successfully demonstrated a path to achieving an embedded real-time implementation of the emotion engine technology. A number of options have been identified for making significant reductions in the computation and resource requirements of the emotion engine.

This TTOM has enhanced Affective Media's understanding of the steps required in order to realise the technology on a resource-constrained embedded platform. This will help to reduce the time required to bring the technology to market, and will drastically improve the performance of the call centre system.

There are plans for the partnership between Affective Media and ISLI to continue as a key part of the ongoing development of the technology.

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