

GEO-DOCENT: A SYSTEM FOR AUTHORIZING & UTILIZING GEOGRAPHICALLY TRIGGERED MULTIMODAL INFORMATION

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ABSTRACT:

Geo-Docent is a human centered software application that supports the authoring and presentation of geographically triggered multimodal information (i.e. static or dynamic visual, auditory, tactile, or some synchronized combination thereof). Authoring can be accomplished by direct annotation of a map to create “trigger spots/regions”, using the author’s current location, if the author is actually operating in the targeted area of operations and has a GPS device (and, for instance, wants to automatically add photos taken with a camera), or by importing from an external spreadsheet, NMEA, or GPX file. For each geographically triggered condition one or more actions is specified, such as activate the tactile display with this set of parameters (tactor, frequency-gain-duration pattern) to direct the wearer to the prescribed route or a particular way point and/or encode other “state information” such as man-down or imminent danger, show this image, play this video, play this audio, synthesize this speech, etc.

The system is currently designed to operate in the field with the Samsung Q1 ultramobile device, that stores the authored content, interacts with a Bluetooth GPS device, plays the multimedia information, performs voice recognition and synthesis, and also sends messages to a belt of tactors worn around the abdomen through a Tactor Control Unit (TCU). The Samsung Q1 ultramobile is a tablet device with a built-in camera facilitating efficient taking of snapshots at particular locations and annotating over those snapshots in a very natural manner using the stylus as a pen. Further, CWS has developed a plug-in software module which supports synchronizing those annotations with voice commands so that deictic gesturing can be supported and the information communications benefits associated with that multimodal form of communication achieved.

Current efforts are focused on providing navigational directions to a prescribed route and incorporating geo-referenced multimedia data. Future efforts will include exploring the utility of geo-referenced multimedia data generated by DARPA’s fielded TiGRNET system for field training and to support deployment handoffs. Potential applications include mixed reality training, controlled field experiments, patrol data collection, handoffs, accident investigation, and guided navigation through complex areas of operation.

KEYWORDS: multi-modal displays, tactile displays, visual signaling, auditory signaling, geo-referenced

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