Animal Computer Interaction Design

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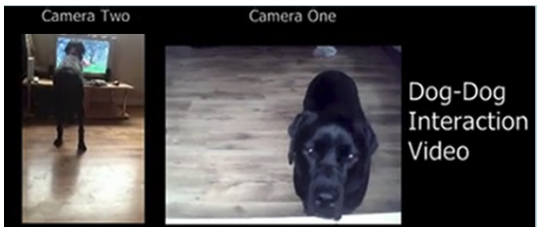
(a)



(b)

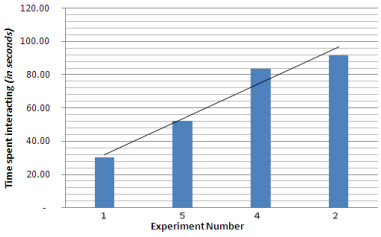


Figure 1: *(a) A dog involved in the study watching a video (b) A graph showing the dog's relationship between the video interaction content and the time spent viewing the video with a straight linear tread line showing positive correlation.*

1 Concept

This research uses HCI (Human-Computer-Interaction) user-centric approach to help develop pet dog species appropriate visual/audio stimuli. This is evaluated using Ground Theory Methodology (GTM), User Centered Design (UCD), Developmentally Situated Design (DSD) and User Centered Situated Design (UCSD) to improve Animal Computer Interaction Design (ACID). This generated animal centered design, solving usability problems within design, giving insight into dogs' cognitive model and investigate a GTM and ACID hypothesis framework.

2 Animal-Computer-Interaction-Design

ACID is a newly emerging field of study creating technology for animals. The societal need for this technology has come from a distinctive anthropomorphism towards pets, but especially in dogs which are also used in working situations (e.g. army and disability services) and are a byproduct of human adapted evolution. Scientifically the approach into the canine genome [Ostrander, 2005] has lead ethnologist and comparative psychologists to examine a dogs' cognitive model and its applicability to the current human sculpt.

3 Merger of ACID and HCI

In computing HCI has been used to analyse human behaviour drawing knowledge to get closer to cognition aiding the product design. Since the terms first use in 1975, methodologies and theories have been built to improve HCI such as GTM, UCD, DSD and UCDS. The increased relevance of HCI academia to design for a vast area of users [CHI, 2013] has led to the possibility of HCIs' applicability to animals [Mancini, et al 2012]. A key illustration is designing technology for a child with disabilities that cannot talk is similar to a dog as they require proxy-interpretation. This research extracted the relevant areas and applied the features to create ACID theory.

4 Method

In order to apply the methodology first the dogs' physiology and psychology were taken into account focusing on audio and visual communication modes. Once the context and task field were established the decision was made to use the owner-dog relationship to measure the dogs' variables via a human proxy as well as a video footage for quantitative data. The design has to be scrutinized from both the dog and human perspective to reduce the human driven incentive behind carrying out research with animals. The implementation of a GTM corpus allowed for the results to sculpt the video categorization, building theory from evidence rather than perceived requirements. An initial subject of one dog was chosen to test a multiplicity of 2 minute long videos with the interaction(s) number(s) and time being calculated to create an interactive range to measure the video(s) against (a). The interaction was split into gaze/stares with any behavioral changes noted to build up a framework of dog interactive principals.

5 Results and Conclusions Reached

While the results did not prove that the videos were beneficial to the dog, the owners co-location assessment shaped by the dogs interest did report inquisitiveness in the videos. The corpus began with two trials; one of a dog designed video and one of a human-designed video. As expected the dog reacted to the dog-designed video which led to the ACID theory that it is the subjects shown to the dog in the video which causes interaction, rather than the physical metrics (i.e. colour shown). To analyse this theory, videos varying from human-human (exp.1), human-animal (exp. 5), animal-animal (exp.4), dog-human and dog - dog (exp.2) were shown and a table was built of the results (b). Interactive videos were then tested on a second dog subject to see the comparability. This study allowed for a dog to co-operatively design regardless of language and created a GTM theory that dogs will have fewer interactions but for higher periods, the more dog and animal oriented the videos are. Despite human cohabitation dogs are still animals and although HCI can be used to explore ACID, the need for a species relevant foundation of theory is evident.

References

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