
Doggy Ladder of Participation (DLOP)

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Abstract

This paper presents a topology for defining the level of participation within Animal Computer Interaction (ACI) adapted from Hart's Ladder Model of Youth Participation [1]. Dogs have continually been included within ACI design with varying participatory roles. This paper aims to define dogs' participation according to their ability to participate. A model containing four rungs is presented and then explored in terms of increasing dogs' participation within ACI design.

ACM Classification Keywords

H.5.2 Information Systems, User Interfaces: Methods.

Introduction

Dogs increasingly have formal positions within modern society, as pets and working dogs. This has been followed by the progressively developing animal rights movement that sees dogs, among all animals, as 'persons', not possessions, with thoughts and feelings [2]. With the introduction of ACI as the formal study of making technology for animals, this paper provides ACI researchers with a framework to increase, articulate and consider the dog(s) participation by acknowledging the preferences of the dogs and by encouraging designers to consider ways to allow dogs to take a proactive role in ACI design. Dog participation in ACI design, through confidence and competence to be included, can be gradually increased and improved through practice and by finding methods that allow dogs to be involved despite the spoken language



Figure 1: Topology of Doggy Ladder of Participation (DLOP) showing the four rungs:

- 1) Training
- 2) Freedom
- 3) Empower
- 4) Informed

barrier. For example, the lack of a shared spoken language can be circumvented through body language as this can be used to collect dogs' feedback on systems and products.

Harts ladder of participation

Hart's eight-rung model considers the engagement of young people within their community as actors in research [1]. Human Computer Interaction (HCI) has used Hart's ladder to consider participation [3], suggesting this is a possible starting point for understanding doggy participation in ACI.

Definition of dogs' participation motivators

Participation in social science is defined in terms of access to mechanisms for sharing opinions – ideally exerting influence. Dogs regularly make decisions and organise themselves both through play and work. Hart [1] suggests that people are motivated into participation through having a feeling of ownership and involvement. While dogs' motivators could be different or similar to those of humans, it is only really known that primary motivators for dogs are rewards such as toys or food. The question behind dogs' motivations brings to the forefront the importance of not imposing human morality onto dogs. A dog is not a human and thus its morality as to what is acceptable and what is not acceptable will likely be different to humans.

Dogs' participation ability

The notion behind including dogs within participatory design or research is not about the dog participating in solitude but rather a methodology where dog and human participations are intertwined. If, through this empowerment, and understanding, a dog might get the sense that its needs and 'ideas' are listened to, a dog

would theoretically be more likely to give its opinion more freely. The need for participation is also more greatly needed in disadvantaged dogs as this can empower a dog through allowing more equal relationships between humans and dogs. When dog owners see their pets as possessions they feel able to treat them however they like. The need for freedom of expression and participation here is more important as the dog cannot tell about abuse and cannot ask for help. Without human intervention a dog could climb to the highest level of participation (on Harts ladder) that being self-organisation [1]. Dogs that become self-reliant can make their own shelter/food/family making daily decisions on their own [4]. It is therefore a balancing act between the acknowledgement of a dog's ability to participate and our, as designers, duty to ensure that we enable this relationship.

Doggy Ladder of participation (DOLP)

In an endeavour to sculpt this equilibrium, of humans and dogs, a **doggy ladder of participation (DOLP)** (Fig.1) is presented to encourage dog-computer-interaction designers to better include dogs within their devised processes. Through dogs' inclusion with technology, a dog's preferences can be derived rather than guessed thereby offering a fresh perspective from the intended user. The DOLP model is split into two halves: non-participation and participation (Fig.2).

Training and Freedom: Non participation

Training Participation (1st Rung)

Training is the lowest rung of non-participation and is mostly used as an ornamental form of participation. The dog is manipulated within the ACI study without any understanding, often 'forced' via a reward or treat.

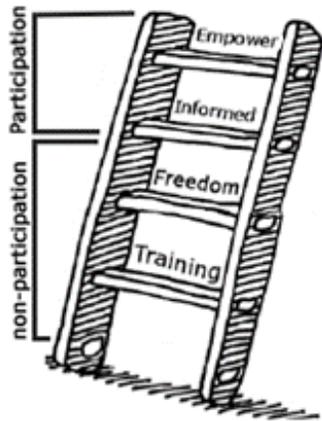


Figure 2: DLOP model with degrees of participation and non-participation

Participation here is the dog being used to confirm agreement and so does not add any information to the design in regards to the dogs' judgment. The use of a treat/toy is often used as a progressive form of training where a token is given to the dog to thank them for their input. Even within ACI there is a strong tendency to underestimate dogs' abilities and see them as a possessed item to be dictated to by trainers/owners and ordered to perform.

This rung is within the non-participatory category as most often the motivation of the process hides the dogs' true judgement without validation away from the human intervention. From this category a dogs factual acknowledgement can be drawn (i.e. drugs detection) but not their belief. The key flaw to participation through training is that little or no feedback is given to the dog, and she/he does not have consent to partake. While a dog could never sign its consent in a humanized manner, she/he does have the ability, but not always the right, to 'walk away'. This ability is key within ACI design, as if the dog is forced to give feedback it could be a biased result.

Freedom Participation (2nd Rung)

Freedom participation is the second non-participating rung on DLOP. For this, the study is still an owner led activity but the dog is free to do what he/she wants without training or manipulation through treats. The ability for a dog to walk away allows a form of consent. Body language of the dog is habitually the only recordable feedback the dog gives through attention/non attention. This rung gives a minimal voice to dogs but they still have little/no choice about the style of communication with little/no opportunity to formulate their own opinions. The two key differences however between training and freedom participation is the ability to walk away without the bias of an

incentive. Through this ability to walk away (attention/non attention) the body language and vocal signals can be judged as a more simple preference. These choices nevertheless still have little impact upon the design other than a yes/no form of consensus. The methodology of Grounded Theory (GTM) has regularly been used in this rung to illicit the choices made by animals to shape the design process [6]. However the initial decision is still made by the human designer, with the animal having no input other than acceptance/denial.

Empowerment and Informed: Participation

Informed (3rd Rung)

In this rung the dog is consulted through its body language on its choices, which have a direct impact upon the design. The analysis of the body language is more complex than a yes/no consensus, with questions into how the dogs' emotions influence its choices and seeking to understand why it desires each choice. This brings a more in-depth viewpoint to the pronouncement rather than just accommodating the result. Within this rung, the dog is also empowered by understanding, in part, the intentions of the project. While it is currently impossible for the dog to fully grasp the whole concept, through repetition a dog could understand that their decisions have an impact upon the design concept as a whole [7]. It is possible for a dog to understand that their actions cause a reaction without always understanding the cause [7]. This use of dogs within ACI is aimed at progressing their use beyond tokenism. In order to use this rung the designer must make sure that the dog(s) included within the design have a level of understanding and are not simply included within the design to qualify as participation.

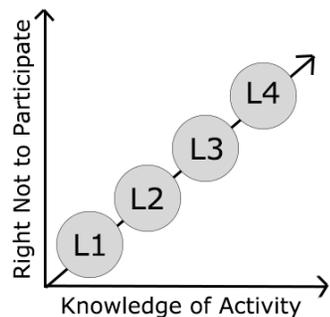


Figure 3: Axes showing the DLOP levels increasing in the knowledge of the activity and the right not to participate as the levels rise.

- L1 – Training
- L2 – Freedom
- L3 – Informed
- L4 - Empowered

Empowered (4th Rung)

The fourth rung of 'Empowered' is a conceptualised ideology, where it is hoped through the advances of animal biometrics (e.g. electrocardiograph/tail wag(s)), it would be possible to gain more insight into a dog's thought processes and thus its opinions. Within this rung a dog would understand its choices have an impact upon the design and would therefore understand the outcomes of its choices. Their choices will also have an impact upon the designers/activity thus decisions/activity. Dogs and humans often have unspoken conversations, where both sides understand the emotions and outcomes of this discussion. Trainers within dog agility, among other sports, often describe their dog as being 'honest'. This is where the dog is truthful to the owner on its own ability and the owner equally. Through this conversation the duo through meta signals perform together better while knowing their own flaws [8]. With this acknowledgement of a constantly occurring conversation improving performance comes the comprehension that there is a regular conversation and it can profit both the dog and the human. By capturing this conversation, through including technology within the meta signals to fit the conversation conventions, this could greatly enrich both ACI technology and the dogs own understanding of the decisions/activities.

Conclusion

This paper presents a model of measuring dogs participation within ACI coined DOLP - Doggy Ladder of Participation (Fig.3). The ladder has four rungs: Training, Freedom, Informed and Empowerment with shifting levels of participation. Questions are raised around the motivators behind a dog to participate

within a technological design and its ability to participate. In working with dogs the crucial component for a successful ACI design is not the apprehension behind the language barrier at preventing dogs to participate in our designs but our methodology of inclusion that does not empower the dog enough to provide invaluable feedback. By allowing computers to understand dogs meta signals, their primary language, this opens up the possibility of technology being included within the already established human-animal conversation. This adjustment in increasing participation with animals and researchers in ACI is needed to derive more accurate results allowing animals to shape ACI themselves.

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