cuACS

Carleton University Animal Care System

ACM Design Document

Team 777

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1. Introduction

1.1 Purpose

The system is designed to pair up clients with their individual ideal animal from a pool of different species and breeds. To do this a reliable algorithm and proper implementation is required. The purpose of this document is to describe in detail all aspects of the Animal-Client Matching (ACM) algorithm developed.

1.2 Overview of Document

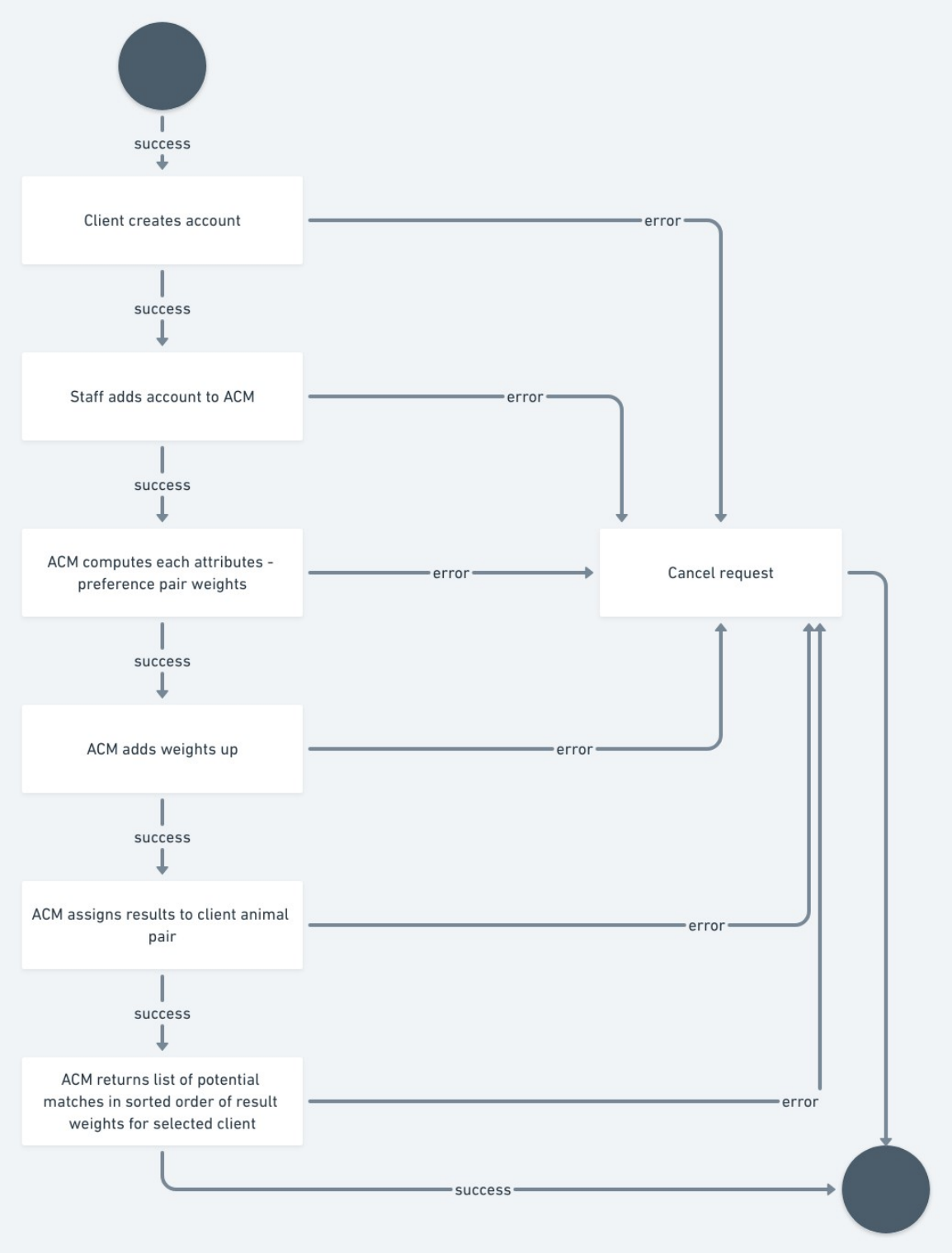
This document details the algorithm the system uses to match clients with appropriate animals. Also describes the criteria on which the the actors are assessed. Here the preferences and information of the client are outlined as well as the attributes of the animals which the clients information is compared against. Also how client and animal information is stored and processed. They are the result of consultation with the client and represents their needs and desires and research on how other matchmaking systems are run e.g. OKcupid.

2. Proposed System

2.1 Overview

Each animal attribute has weights from 1 to 10 (except specified) and the user enters information on their account, which has similar information about them, detailing how important each attribute is to them. This is done by the user entering weights of their own associated with their accounts for each attribute. We then subtract the user input weight from the animal attributes weights for each pair of corresponding weights and return the absolute value. After that each result is added together and the closer the result is to zero (for each client and animal pair) the better of a match they are. So a perfect match would be a client animal pair where their result is zero.

Figure 1


success
Client creates account
error
success
Staff adds account to ACM
error
success
ACM computes each attributes - preference pair weights
error
Cancel request
success
ACM adds weights up
error
success
ACM assigns results to client animal pair
error
success
ACM returns list of potential matches in sorted order of result weights for selected client
error
success

2.2 Attributes and Preferences

The client has an attribute called preferences with sub attributes which are the same as the animal requirements. The client preferences sub attributes (which client enters) are compared with animal attributes.

All attributes have a range of values from 1 - 10 unless specified
List of animal attributes:

- Activity
    - How active is the animal? Is it low activity (such as spends most of the time sleeping, or sitting idle, ex: snake, a fish). Is it medium activity, where it may require a bit of effort to maintain / control (such as an older cat), or is it very active and requires a lot of effort to maintain / control (like a Puppy).
- Space required
    - Does the animal require a lot of space? Some animals may require very little space (such as a fish, or a bird), does it require a moderate amount of space (such as an entire room, or multiple rooms, like for example a horse), or does it require a lot of space, (such as an outdoor cat/dog or a horse).
- Noise
    - Is the animal loud? Some animals may be very quiet (such as a fish, snake), some animals may be moderately loud (some dogs or cats), and other may be very loud (monkey)
- Training Difficulty
    - Some animals may require different levels of training. Some animals may require 0 training, some animals may require a little amount of training, some animals may require moderate of training, and some animals may require a lot of training and be difficulty to train. Like a fox may need more training than a cat
- Rescued / Bred
    - Some animals in the shelter may be bred or rescued. This will just be preference.
    - Rescued, bred. Binary 0 for rescued and 1 for bred. Return absolute value after client preference and animal attribute comparison
- Age
    - Age will be relative to the kind of animal, but will probably fall into very young (puppy / kitten age), young, middle aged, old
    - Very young, young, middle aged, old.

- Maintenance
    - How difficult to maintain. Does it have a specific diet or routine that makes it more difficult to maintain. Maybe daily walks or specific temperature requirements
- Risk
    - Some animals may have some risk associated with them. This can be problematic if you have young children. Animals may have 0 risk, low risk,

medium risk, or high risk, e.g. snakes, scorpions

- Cleanliness
    - Some animals may be very messy, some may be moderately messy, some a little messy, and some clean.
    - Clean, little messy, moderately messy, very messy.
- Social
    - Some animals are very social and require a lot of social contact. Some animals require a lot of social interaction so you may need to get more than one ideally
    - No social contact, little social contact, moderate social contact, a lot of social contact.
- Independence
    - Some animals require constant attention while others don't. E.g. an ant farm with a good ecosystem may not require as much attention as a dog that needs to be walked every day
- Rarity
    - How rare / unique is the animal, some people prefer rare exotic animals or species
- Personality
    - This details the types of personality the animal has. For example this could determine whether you want a dog for protection or leisure
    - The options are, timid, aggressive, sensitive, friendly, energetic. The user can enter more than one value and the animal could have more than one personality trait. Each trait of client preference and animal attribute would carry 2 points with both for a maximum of ten. When a matching trait is found subtract points from client and animal. e.g. client choose timid and friendly – 4 points, animal is timid and sensitive – 4 points. Subtract matching points (timid – 2) abs(2 – 4) = 2 points, close match but not perfect

Glossary:

ACM: The ‘Animal-Client Matching’ algorithm which will match animals and prospective clients.

Animal: An animal in the shelter that is placed in the cuACS to be adopted.

cuACS: The Carleton University Animal Care System.

Client: An individual who is placed in the cuACS with purpose of adopting an animal.

Staff: Individuals who work at the shelter and will manage the adoption process using cuACS.