cuACS

~ Animal-Client Matching Algorithm ~

Animal Attributes

- Affinity for People
- Affinity for Animals
- Affinity for Children
- Training
- Trainability
- Approachabilty
- Level of Care
- Time Commitment Required
- Energy Level
- Estimated Cost Per Month
- Life Expectency

Client Attributes

- Patience
- Physical Affection
- Previous Pet Experience
- Mobility
- Time Availability
- Budget
- Optimal Ownership Length
- Has Pets
- Has Young Children

Categorization of Attribute Comparisons

- **Social** – concerns directly related to personality or social well-being
  - e.g. Requires a lot of attention
- **Physical** – concerns directly related to physical well-being
  - e.g. Needs to be walked 4 times a day
- **Other** – concerns not defined by the other two categories

Attribute Matching - Social

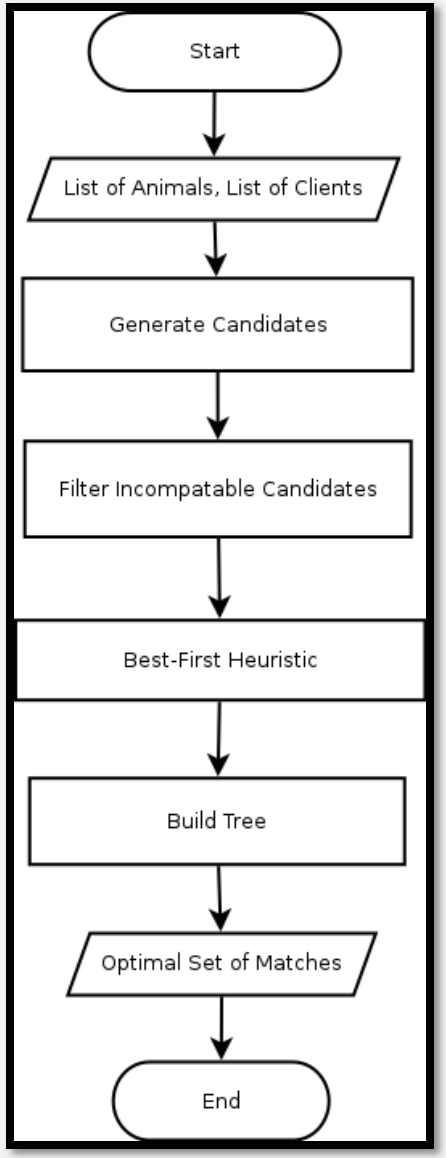
Animal	Client
Affinity for People	Patience
	Physical Affection (Expressive)
Trainability	Patience
	Previous Pet Experience
	Time Availability
Approachability	Patience
	Previous Pet Experience

Attribute Matching - Physical

Animal	Client
Level of Care	Level of Mobility
	Previous Pet Experience
	Time Availability
Training	Previous Pet Experience
	Time Availability
	Level of Mobility
	Patience
Time Commitment Required	Time Availability
Trainability	Time Availability
Energy Level	Level of Mobility

Attribute Matching - Other

Animal	Client
Estimated cost per month	Budget
Affinity for Animals	Has other Pets
Life Expectancy	Optimal Ownership Length
Affinity for Children	Has Children


Start
List of Animals, List of Clients
Generate Candidates
Filter Incompatable Candidates
Best-First Heuristic
Build Tree
Optimal Set of Matches
End

Algorithm

Pre-Search Filtering

- Use threshold
- Remove wholly-undesirably matches before building the tree

Production System

- Consider unexplored combinations
- Select the best

Best-First Search

- Prioritize nodes with high compatibility

Pruning

- Determine elegebility of subpath before exploring
- Ignore subpaths guaranteed to be sub-optimal

Solution

- Produce the best set of matches with the greatest mean average
  - If the performance increase option is enabled, the first set of matches satisfying a minimum threshold will be produced instead
- Solutions will be considered if and only if it includes all Animals
  - Assuming that there are fewer animals than clients and
  - The animals have a least one quality and available match

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