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POSTERS

THE INFLUENCE OF AGE AND COLOR ON THE TIME PUPPIES SPEND IN SHELTERS: APPLICATION OF MACHINE LEARNING METHODS IN DATA ANALYSIS

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This study aims to determine how puppies' age and coat color may influence their time spent in a shelter, using data from the "Penkta Koja" shelter database. Initially, data analysis, processing, and categorization were performed to prepare the dataset for further exploration. Machine learning methods were then employed to develop classification and clustering models to understand which factors most significantly affect the differences in shelter duration among puppies. Additionally, the study examined whether age and color could impact how long puppies remain in the shelter. The results showed that specific puppy characteristics significantly influence their time in the shelter. These insights can be used to optimize shelter operations and improve the care processes for the puppies.

Key words: *shelter time, puppies' age, puppies' color, machine learning, data analysis*

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PROBLEM

Determining how specific factors, such as age, size, and coat color, influence the duration of stay for dogs in animal shelters.

RELEVANCE

Reducing shelter stay duration improves resource allocation and increases adoption rates, benefiting both the shelter system and the animals.

NOVELTY

Applying machine learning methods, including supervised and unsupervised learning (neural networks and K-means clustering), to discover patterns in shelter dog data that may not be apparent through traditional statistical methods.

AIM

Apply predictive models and group analyses to identify characteristics that impact duration of stay in a shelter.

TASKS

1. Preprocess and clean the dataset for analysis.
2. Implement a classification model using neural networks to predict stay duration categories (short, medium, long).
3. Perform clustering (K-means) to uncover hidden patterns within the data.
4. Visualize findings through graphs and charts.

SOLUTIONS AND RESEARCH METHODS

Data Collection: Historical data of dog data including variables such as age, coat color, size, and duration of stay.
Tools Used: Statistica 7 for neural network and clustering analysis.
IT tools:

1. Neural Networks (Multilayer Perceptron) for classification.
2. K-means clustering with different cluster configurations (3, 4, and 5 clusters).

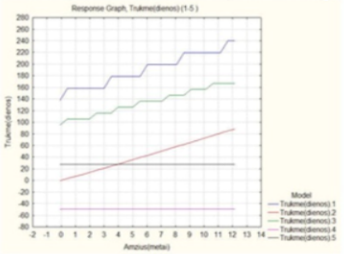
DATA PROCESSING

The dataset from the "Penkta Koja" shelter was utilized for statistical analysis, focusing on the hypothesis that age and coat color influence the duration of stay for dogs in the shelter. Data was categorized into relevant groups, such as age, coat color, and shelter stay duration. These categorizations enabled the application of statistical methods to extract meaningful insights. By preprocessing and structuring the data effectively, patterns and correlations could be analyzed more comprehensively.

Spalva	Amžius		Trukmė
Šviesi	Jaunas	iki 4,05 metų	Trumpa
Tamsi	Vidutinio amžiaus	nuo 4,05 iki 8,11 metų	VidTrukmė
Vidutinė	Senas	nuo 8,11	Ilga

RESULTS

Applying neural networks and K-means clustering revealed age-based patterns in shelter duration. Puppies up to 4.05 years stayed for 40–160 days, those aged 4.05–8.11 years averaged 160 days, and older puppies, over 8.11 years, exceeded 200 days. These insights can improve shelter operations and adoption strategies.



CONCLUSION

Age was confirmed to influence shelter stay duration.

SUPERVISOR

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