Mahine Learning Report

Title: Deciphering Abalone Ages through Machine Learning Methods

**Abalone Dataset**

Part 1 Introduction

传统方法测定鲍鱼的年龄是通过从圆锥体切开鲍鱼壳、染色并通过显微镜计算环数来确定的，这种方法耗时且破坏性，依赖于手工，易受技术人员主观判断影响，且对鲍鱼可能造成伤害，这些因素限制了其效率和准确性，促使研究人员探索更优解决方案。而其他更容易获得的测量结果可用于预测年龄，可能需要更多信息，例如天气模式，位置和​​食物供应情况等。

在本篇报告中，我使用包含鲍鱼的物理测量数据的UCI Abalone数据集以及R tidyverse构建机器学习模型，以一个更为优雅的方式对鲍鱼年龄进行预测。

Data

|  |  |  |  |
| --- | --- | --- | --- |
| Variable Name | Type | Description | Units |
| Sex | Categorical | M, F, and I (infant) |  |
| Length | Continuous | Longest shell measurement | mm |
| Diameter | Continuous | perpendicular to length | mm |
| Height | Continuous | with meat in shell | mm |
| Whole\_weight | Continuous | whole abalone | grams |
| Shucked\_weight | Continuous | weight of meat | grams |
| Viscera\_weight | Continuous | gut weight (after bleeding) | grams |
| Shell\_weight | Continuous | after being dried | grams |
| Rings | Integer | +1.5 gives the age in years |  |

Part 2 Data Cleaning and EDA

文本

描述已自动生成

Part 3 Modelling

Part 4

**Reference**

[Abalone Dataset (kaggle.com)](https://www.kaggle.com/datasets/rodolfomendes/abalone-dataset)