Applying Benford's Law to Image Tampering

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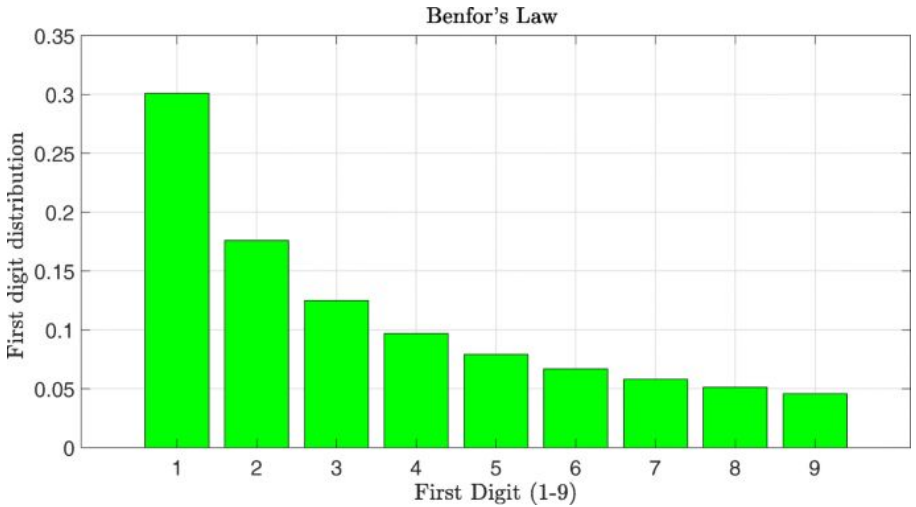
Benford's Law

Law

- Law of first digits
- Frank Benford
- Large datasets
- The number 1 occurs 30.1% of the time, while larger numbers occur in a decreasing manner until 9.



Applications

- Stock market
- Financial statements
- Fibonacci serie
- Populations
- Music
- Images
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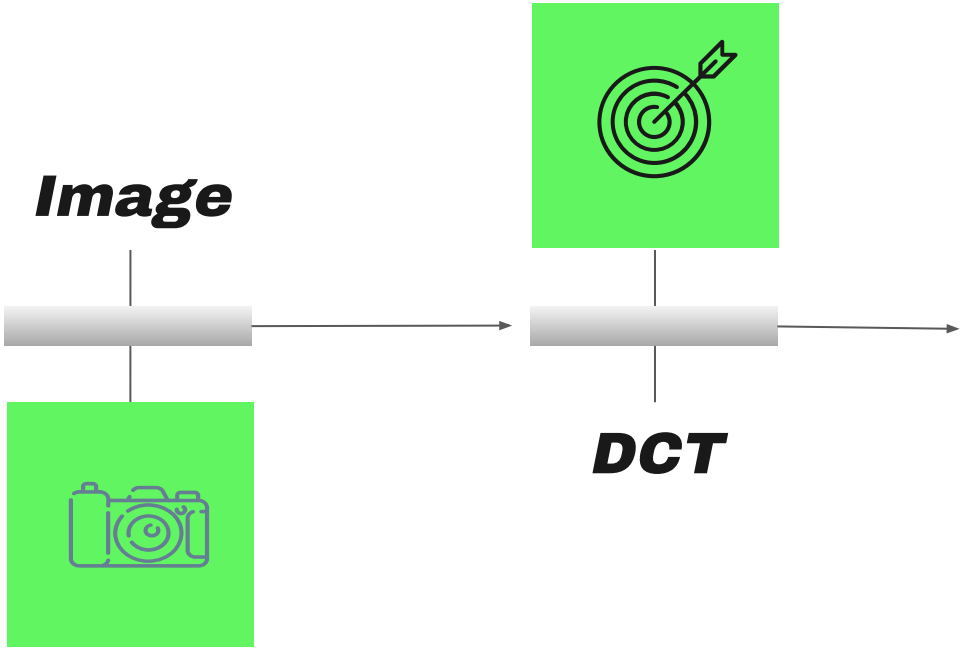
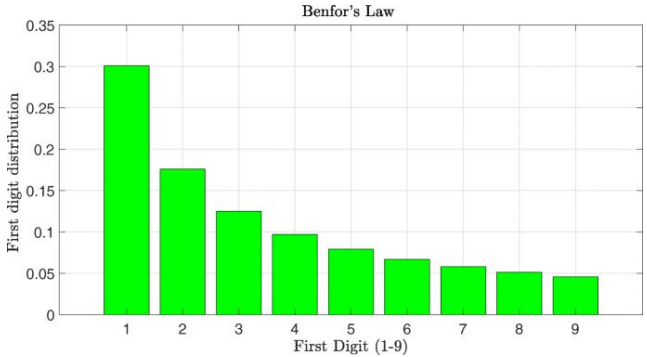
Can the tampering of images be predicted based on their DCT following Benford's Law





Workflow

01

Dataset

Dataset with half images original and other half tampered.

02

DCT code to loop through all images

03

Create Dataframe

Dataframe with Image, image ID, frequency of 1st digits, and if it is original or tampered

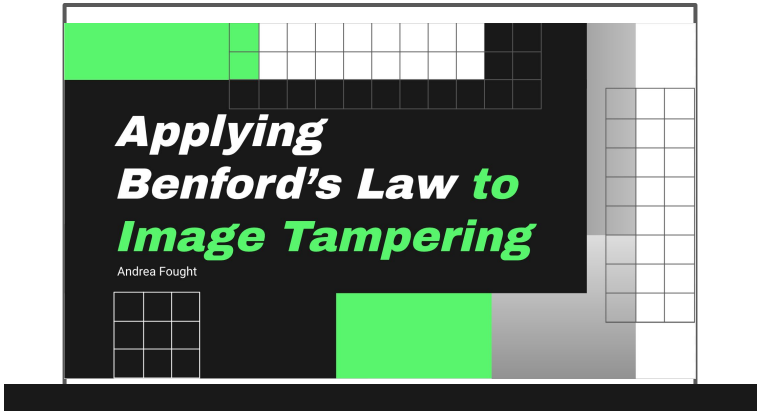
04

Machine Learning and graphs

Used decision tree ML and Benford's law graph to predict image tampering

Prediction Model

Show prediction model on google colab:
https://colab.research.google.com/drive/12HhC7AO2lT8R994WX2liHx62h-ynydAc#scrollTo=9eMvvE_N6OB-



THANKS!

Do you have any questions?