# TOWARDS GREENER AI

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Problem Description

- Number of data centers are increasingly rapidly as the years are passing by and hence increasing the comsumption of computational energy.

- On top of that, despite phone batteries holding more charge than ever before, the energy taken by a mobile CPU means you never need to be far from a charging point!

- Surprisingly there has been little previous work on energy optimization of Java applications. Our goal is to get general methods which would help us reduce energy consumption.

Project Aims and Challenges

- Exploring the impact of different datasets on the energy consumption of various classifiers in the Java WEKA toolkit.

- The focus is on Java implementations, but techniques are general and are applicable across a wide range of programming languages.

- Hyperparameter search with two objectives energy consumption and accuracy are calculated to see whether there is a trade-off between them or not.
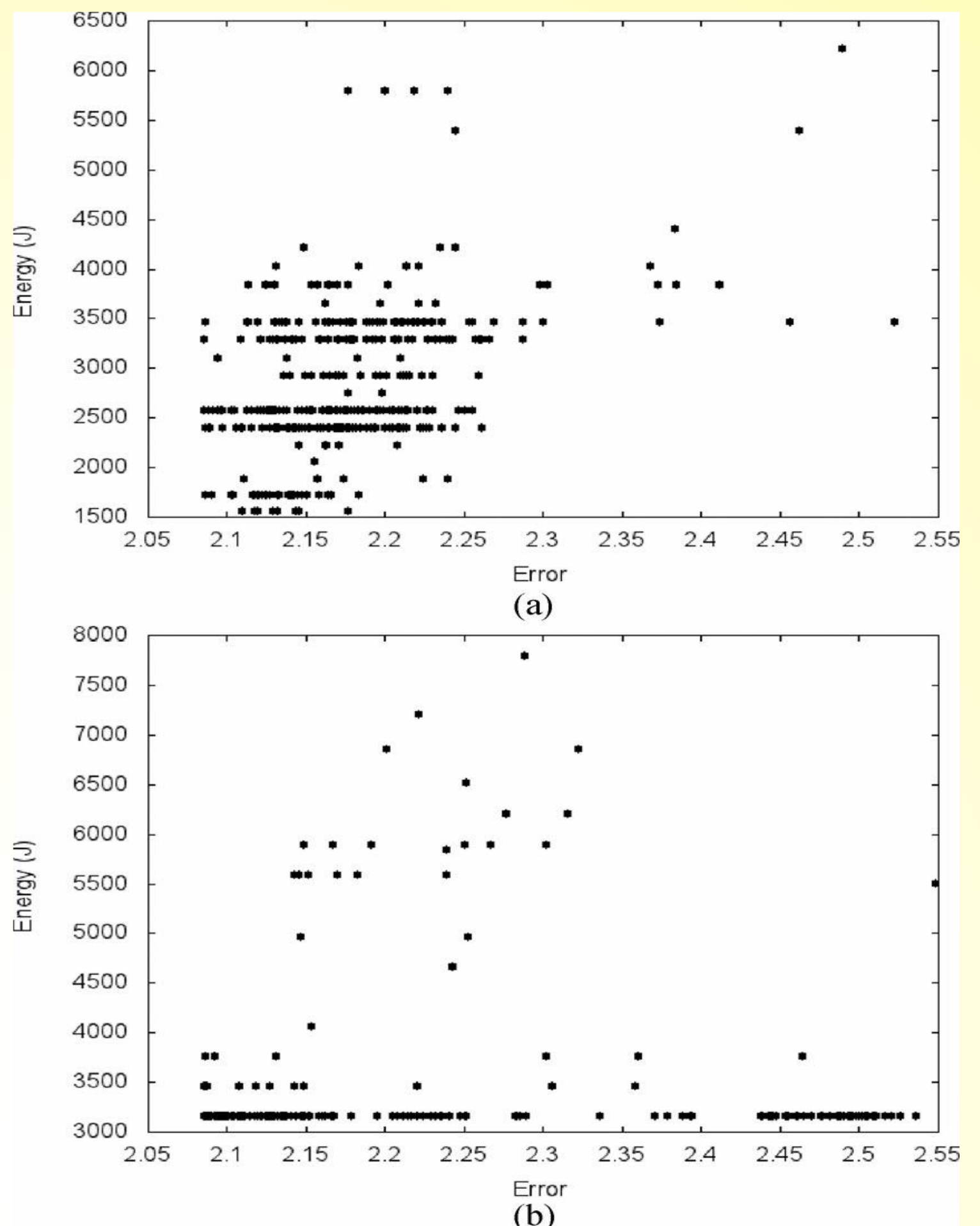
A. E. I. Brownlee, N. Burles and J. Swan, "Search-Based Energy Optimization of Some Ubiquitous Algorithms," in *IEEE Transactions on Emerging Topics in Computational Intelligence*, vol. 1, no. 3, pp. 188-201, June 2017.

Tools and Machine Learning Technique

- OPACITOR, a tool for measuring the energy consumption of JVM programs using a bytecode level model of energy cost.

- Neural Networks

- Decision Trees

- Multi Linear regression

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