**AVFDT: Adaptive Very Fast Decision Tree**

**Preliminary Results**

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**INTRODUCTION**

**Problem**

Machine learning algorithms account for a significant amount of energy consumption in data centers.

**Goal**

Reduce energy consumption of online decision trees.

**How?**

Adaptive Very Fast Decision Tree (AVFDT). Extension of the VFDT that uses the nmin adaptation method.

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**Very Fast Decision Tree (VFDT [1])**

- VFDT builds a tree incrementally
- After nmin instances are observed at a node, the best attributes are obtained (information gain)
- If (∆G>ε) or (∆G<ε and ε<τ) → Split
- If no split → A lot of energy is wasted to calculate the best attributes

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**AVFDT**

**Method:** Adaptation of the nmin parameter for Hoefding Trees.

**How?:** Dynamically adapt the value of nmin depending on the incoming data. The goal is to set nmin to a value that ensures a split on the node.

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**RESULTS**

- AVFDT consumes 23% less energy in average
- On average, AVFDT achieves <1% less accuracy
- AVFDT obtains a maximum 89% energy decrease

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**REFERENCES**


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**MOTIVATION**

Reducing the energy consumption of algorithms

Energy efficient data centers

Run ML algos on embedded systems

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**EXPERIMENT**

- Comparison: AVFDT vs VFDT
- 7 datasets: 4 artificial, 3 real
- 3 values of nmin: 20, 200, 2000

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**REFERENCES**


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Icons: The noun project. https://thenounproject.com