

# Mini Project on ALEX: An Updatable Adaptive Learned Index

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# What is ALEX?

“Kraska et al. proposes to replace a standard database index with a hierarchy of machine learning (ML) models. Given a key, an intermediate node in the hierarchy is a model to predict the child model to use, and a leaf node in this hierarchy is a model to predict the location of the key in a densely packed array”

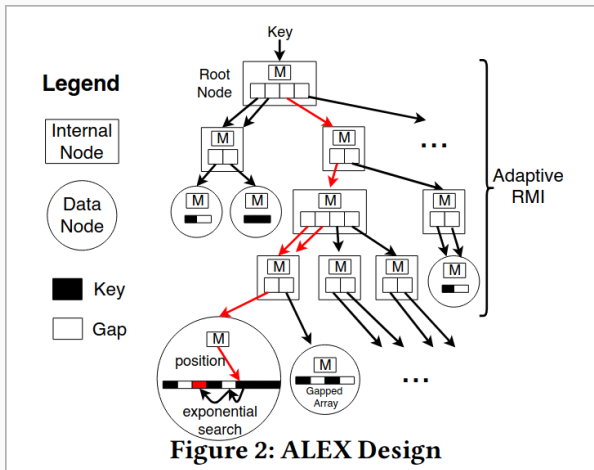
## What is ALEX? cont.d

ALEX is an extension upon the Learned Index work by Kraska et al. to introduce the ability to insert, update and delete in the tree.

The goal is to support:

- Insert time should be competitive with B+Tree
- Lookup time should be faster than B+Tree and Learned Index
- Index storage space should be smaller than B+Tree and Learned Index
- data storage space (leaf level) should be comparable to dynamic B+Tree

## What is ALEX? cont.d



# Plan for the Project

- Experiment with Polynomial Regression
- Run BayesOpt and/or Structural Bayes Opt on leaf array size, leaf array split/expand condition, leaf array gap ratio on initialization ...
- Experiment with other light weight models ...
- Experiment with string keys.

# The End

Thank you for your time!