

# Summary

## An Infrastructure for Adaptive Dynamic Optimization

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### 1 To be completed before class

#### **What are the problems solved by this paper? (50 words)**

As the current trends in software is towards using dynamic libraries and platform independent code, the scope for the traditional static optimizations is very limited. So there is a need for using a dynamic optimization framework. In this paper we discuss about one such framework called DynamoRIO which is based on Dynamo but used to dynamic optimizations for the x86 code. One major difficulty with such frameworks is that they are usually built for specific purposes. So there is a need for a general API for these dynamic optimization frameworks to make them more usable.

#### **What are the approaches attempted by this paper? (50 words)**

The DynamoRIO basically acts as an interpretation engine and caches the optimized code. It first copies the basic blocks into a basic block cache. Then it combines basic blocks if there is a direct branch between them. And it forms a trace cache for the basic blocks that are separated by indirect branches. The API has a call for each basic block and for each trace. Also other calls are also inserted.

#### **What are the main conclusions of this paper? (50 words)**

The paper uses the DynamoRIO API to do many optimizations like Redundant Load Removal, Strength Reduction, etc. The paper shows that there is a 12% improvement over the basic DynamoRIO. The floating point benchmarks show much better improvement. This shows that even after the huge overhead of the framework, it is possible to get performance improvement. One advantage of this framework is that it does not need any hardware or compiler support.

### 2 To be completed after class

**Did this paper address an important issue? Explain. (100 words)**

**Are the proposed approaches valid? Describe its strength and weakness. (100 words)**

**Do the results support the conclusions? Explain. (100 words)**

Describe the potential future works? (100 words)