

## Tasks

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1:10 PM

## Tasks

Testing / test cases

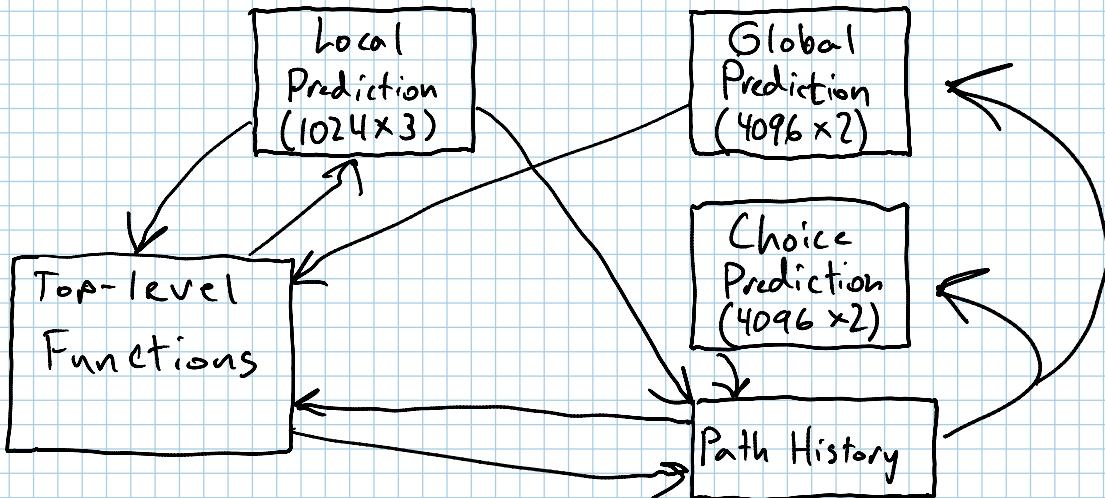
Dummy Framework

get\_prediction function

update\_predictor function

Data structures / access functions

Choice predictor functions - Rob



## Top-level Functions

```
get-prediction()  
// needs to determine whether to use global or local  
// by calling read-choice-prediction(), then read and  
// return prediction
```

```
IF read-choice-prediction() THEN  
    return read-local-prediction()  
ELSE return read-global-prediction()
```

```
update-predictor()
```

```
// Updates local predictor. Then, updates path history.  
// Path history will then update choice prediction and  
// global prediction entries based on the old path history string
```

```
    update-local-prediction(br, instruction-addr, taken)
```

```
    update-path-history(taken)
```

```
    update-choice-prediction
```

## Path History Functions

```
bool read-choice-prediction()  
// return true if choice prediction indicates local, false  
// if indicates global
```

```
bool read-global-prediction()  
// return global prediction result
```

```
void update-path-history(bool taken)
```

```
// taken: true if branch was actually taken  
// Update global prediction at old index based on taken  
// Read and compare local and global prediction results, and  
// update choice prediction if not equal  
// Then shift in taken to update path history for use  
// by the next branch
```

## Choice Prediction Access Functions

```
bool read_choice(uint path-history)
// path-history: path history bits to index into table
// Use path history bits to index into choice prediction
// return true if choice prediction indicates local, false
// if indicates global
```

```
void update_choice_prediction(uint path-history, bool local)
// path-history: path history bits to index into table
// local: true if local predictor was right and global
// Increment/decrement/saturate choice prediction counter
```

## Local Prediction Access Functions

```
bool read_local_prediction(uint branch-addr)
// branch-addr : Branch instruction address (value of PC)
// returns taken or not taken
```

```
void update_local_prediction(uint branch-addr, bool taken)
// branch-addr: branch instruction address (value of PC)
// taken: True if branch was actually taken
// increment/decrement/saturate counter
```

## Global Prediction Access Functions

```
bool read_global(uint path-history)
// path-history: path history bits to index into table
// Use path history bits to index into global prediction
// return global prediction result
```

```
void update_global_prediction(uint path-history, bool local)
// path-history: path history bits to index into table
// local: true if local predictor was right and global
// Increment/decrement/saturate global prediction counter
```

update\_predictor() would call update\_xxxx\_prediction() fn's  
// needs to update Path History  
// Then, needs to update local history

// needs to update main history

// Then, needs to update local history