`parameter.bsv`

The below table explains the different parameters used in the hardware design files of TAGE, divided into three sections for:

1. Simulations : change the values as per preference
2. Analysis: change the values for different bit sizes
3. Hardware specific: change the values only if needed, dependent on the TAGE architecture

1. Simulations

This is for simulations in bluesim using the obtained traces.

Parameter Name	Function	Usage
`traceSize`	Total number of traces (conditional branch instructions) in the trace files.	provide the number of traces as value
`DISPLAY`	Displays the simulation result in the terminal	comment if not needed
`DEBUG`	For debugging, displays the necessary field values	comment if not needed

2. Analysis

Change the design values as needed.

Parameter Name	Function	Usage
`NUMTAGTABLES`	Number of Tagged Predictor tables in TAGE structure	Design value : 4
`TABLESIZE`	Size of each Tagged Table predictors	Design value : 1024
`BIMODALSIZE`	Size of Bimodal Table Predictor	Design Value : 1024
`TAG1_SIZE`	Tag lengths of Tagged tables T0 and T1	Design value : 8
`TAG2_SIZE`	Tag lengths of Tagged tables T2 and T3	Design values : 9
`GHR1`	GHR bits accessed by Tagged Table T0	Design value : 5
`GHR2`	GHR bits accessed by Tagged Table T1	Design value : 15
`GHR3`	GHR bits accessed by Tagged Table T2	Design value : 44
`GHR4`	GHR bits accessed by Tagged Table T1	Design value : 130
`BIMODAL_LEN`	The target bit length of index to access the bimodal table predictor	Design value : 10 (1024)
`TABLE_LEN`	The target bit length of index to access the tagged predictor tables	Design value : 10 (1024)
`PHR_LEN`	The length of the Path History Register	Design value : 32

2. Hardware Specific

Change the below parameters only if needed, dependednt on the TAGE architecture

Parameter Name	Function	Usage
`PC_LEN`	Number of PC Bits	For 64 bits PC
`BIMODAL_CTR_LEN`	Number of bits in Prediction counter of Bimodal Table	Design Value : 2
`TAGTABLE_CTR_LEN`	Number of bits in Prediction Counter of Tagged Table	Design Value : 3
`U_LEN`	Number of bits in Usefulness Counter of Tagged Table	Design Value : 2
`OUTCOME`	Actual branch outcome, that is 1 bit	Design Value : 1
`PRED`	Prediction, that is 1 bit	Design Value : 1
`GEOM_LEN`	To specify the integer value for GHR bits	Design Value : 32
`TARGET_LEN`	To specify the integer value for Target length bits	Design Value : 32