Championship Branch Prediction
website: http://www.jilp.org/cbp

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Introduction: Competition Overview and Workshop Agenda

Jared Stark, MRL/MTL Intel
Overview

• Objective: Compare branch predictors in a common framework.

• Framework
  – Traces
    • 30M inst long, includes user + system activity
    • 2 trace sets: distributed + undistributed
    • 20 traces / set: 5 INT, 5 FP, 5 MEDIA, 5 SERVER
  – Driver
    • Static Info: PC, type (BR, ALU, ...), reg src/dst specifiers
    • Dynamic Info: results, LD/ST addresses, branch outcomes
Overview (cont.)

• Budget: (64K + 256) bits; no attempt to assess other costs (power, latency, design effort, ...)
• Performance: TK/NT accuracy only; accuracy in mispredicts per 1000 inst
• Competition has 2 rounds:
  – Initial: 6 predictors w/ lowest avg mispredict rate on distributed trace set selected as finalists
  – Final: Finalists ranked and champion declared using the undistributed trace set
1:00 *Introduction: Competition Overview and Workshop Agenda*, Jared Stark, *MRL/MTL Intel*

1:10 *Perceptrons for Dummies*, Daniel A. Jiménez, *Rutgers University*

1:30 *Idealized Piecewise Linear Branch Prediction*, Daniel A. Jiménez, *Rutgers University*
1:50 A *PPM-like, Tag-based Predictor*, Pierre Michaud, *IRISA/INRIA*

2:10 *Adaptive Information Processing: An Effective Way to Improve Perceptron Predictors*
   Hongliang Gao and Huiyang Zhou, *University of Central Florida*

2:30 Break

3:00 *A 2bcgskew Predictor Fused by a Redundant History Skewed Perceptron Predictor*
   Veerle Desmet, Hans Vandierendonck, and Koen De Bosschere, *Ghent University*
3:20 *The O-GEHL Branch Predictor*, André Seznec, *IRISA/INRIA*
3:40 *The Frankenpredictor*, Gabriel Loh, *Georgia Institute of Technology*

4:00 *Branch Prediction Caveats and Second-Order Effects*, Phil Emma, *IBM Research*

4:20 *Conclusion: Ranking of the Finalists, Anointing of the Champion, and “What Next?”*
   Chris Wilkerson, *MRL/MTL Intel*

4:30 Adjourn