EECE 7352: Computer Architecture
HW3 Due March 29 11:59pm Eastern

Question 1. (10 points)

Read the following paper which focuses on RISC vs CISC debate.

HPCA 2013: "Power Struggles: Revisiting the RISC vs. CISC Debate on Contemporary ARM and x86 Architectures"
https://research.cs.wisc.edu/vertical/papers/2013/hpca13-isa-power-struggles.pdf

List four main findings from this paper. Also, discuss the key limitations and weaknesses of the paper. Please present your point of view in a concise and coherent manner. Your articulation should be technically sound and crisp. Please do not write more than 15 lines (three-four paragraphs) and do not copy paste from the paper.

Question 2. (20 points)

Read the following papers and list three major findings from each paper.

HPCA 2001: "Dynamic Branch Prediction with Perceptrons"
https://www.cs.utexas.edu/~lin/papers/hpca01.pdf

MICRO 2020: "BranchNet: A Convolutional Neural Network to Predict Hard-To-Predict Branches"
https://hps.ece.utexas.edu/pub/BranchNet_Micro2020.pdf

Question 3. (10 points)

Read the following paper on SLB predictors and describe the main problem this paper is solving (use specific C code examples to support your answer). Why do authors argue that history-based branch predictions are not sufficient?

HPCA 2013: "Store-Load-Branch (SLB) Predictor: A Compiler Assisted Branch Prediction for Data Dependent Branches"
https://lca.ece.utexas.edu/pubs/hpca_2013_umar.pdf