

# Embedded System Design and Modeling

ECE382N.23, Fall 2024

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## Homework #2 Predictive Models

**Assigned:** September 19, 2024

**Due:** October 2, 2024

### Instructions:

- Please submit your assignment via Canvas. Submissions should include a single PDF with the writeup and a single Zip or Tar archive for any supplementary files (e.g., source files, which has to be compilable by simply running 'make' and should include a README with instructions for running each model).
- You may discuss the problems with your classmates but make sure to submit your own independent and individual solutions.
- Some questions might not have a clearly correct or wrong answer. In general, grading is based on your arguments and reasoning for arriving at a solution.

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### Problem 2.1: Reading Assignment

Given the following papers (also linked from the class webpage):

Y. Zhou, H. Ren, Y. Zhang, B. Keller, B. Khailany, Z. Zhang, "[PRIMAL: Power Inference using Machine Learning](#)," *Design Automation Conference (DAC)*, June 2019.

A. K. Ananda Kumar, S. Alsalam, H. Amrouch, A. Gerstlauer, "[Machine Learning-Based Microarchitecture-Level Power Modeling of CPUs](#)," *IEEE Transactions on Computers (TC)*, vol. 72, no. 4, pp.941–961, April 2023.

- (a) Read the papers and submit a written review for both papers (summary, strengths, weaknesses, detailed comments).
- (b) Compare and contrast the approaches to power modeling presented in those two papers. What tradeoffs does each approach make, i.e. what are the pros, cons, potential use cases and limitations of each approach?