

# Embedded System Design and Modeling

ECE382N.23, Fall 2024

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## Homework #5

### ML-Based Mapping & Exploration

**Assigned:** October 7, 2024

**Due (5.1(a)):** November 18, 2024

**Due (5.1(b)):** November 18, 2024

**Due (5.1(c)):** November 20, 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 5.1: Reading Assignment

Read the following papers and submit a written, including brief (executive) summary, 5 strengths, 5 weaknesses, and detailed comments/justification for each paper:

- (a) H. Mao, M. Alizadeh, I. Menache, S. Kandula, "[Resource Management with Deep Reinforcement Learning](#)," *ACM Workshop on Hot Topics in Networks (HotNets)*, November 2016.
- (b) Y. Hu, M. Mettler, D. Mueller-Gritschneider, T. Wild, A. Herkersdorf, U. Schlichtmann, "[Machine Learning Approaches for Efficient Design Space Exploration of Application-Specific NoCs](#)," *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, vol. 25, no. 5, pp. 1-27, August 2020.
- (c) X. Zhao, T. Gao, A. Zhao, Z. Bi, C. Yan, F. Yang, S.-G. Wang, D. Zhou, X. Zeng, "[ROI-HIT: Region of Interest-driven High-dimensional Microarchitecture Design Space Exploration](#)," *International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS)*, October 2024.