

Dynamic I/O Model Selection With Machine Learning

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Abstract—In a typical database and file system, using asynchronous I/O is generally a good way to optimize processing efficiency. However, asynchronous I/O may not be a more efficient way in all situations. In this work, we use Machine Learning (ML) techniques to learn I/O model's performance, and set up a client/server system to recommend the more efficient I/O model under different system loads. The experimental result shows that our system has a 15% performance improvement compared to using asynchronous I/O alone.

Keywords—asynchronous I/O, synchronous I/O, Machine Learning, performance prediction

I. INTRODUCTION

- Data center is popular and I/O is one of the bottlenecks
- asynchronous and synchronous I/O
- Machine Learning
- structure of my system

II. DESIGN

- evaluate io-uring performance and compare to other io-engins and synchronous
- why choosing machine learning and decision-tree
- how to connect client and server

III. IMPLEMENTATION

- collect data
- train data
- build the system
- test the system

IV. EVALUATION

- io-uring performance
- compare single I/O work performance between used and none-used our system
- compare multi I/O works performance between used and none-used our system

V. RELATED WORK

- hot issue in I/O

Identify applicable funding agency here. If none, delete this.

VI. CONCLUSION

improvement of our system and future usage scenario

ACKNOWLEDGMENT

REFERENCES

- [1] G. Eason, B. Noble, and I. N. Sneddon, "On certain integrals of Lipschitz-Hankel type involving products of Bessel functions," Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955.

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