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THESIS

THRASHING AND LOCALITY IN MODERN LINUX SYSTEMS

by

Rick Battle

September 2013

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This thesis is an exploration of the need for thrashing prevention techniques in the modern Linux Kernel in light of large scale systems.

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THRASHING AND LOCALITY IN MODERN LINUX SYSTEMS

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Submitted in partial fulfillment of the
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This thesis is an exploration of the need for thrashing prevention techniques in the modern Linux Kernel in light of large scale systems.

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I want to thank everybody who helped me get to where I am today.

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CHAPTER 1:
Introduction to Thrashing and Locality

If you got this far, then the front mater works.

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CHAPTER 2:
Prior and Related Work

Prior Work

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CHAPTER 3:
Thrashing, Locality, and Implemnting Working Set

Methodology

3.1 Demonstration of Thrashing

Induced thrashing

3.2 Demonstration of Temporal Locality

Graphed memory usage patterns to demonstrate temporal locality.

3.3 Implemntation of a Locally Controlled Working Set Policy

Kernel hacking!!!

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CHAPTER 4:
Performance Measurements of the Locally Controlled Working Set Policy

Graphs!!!

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CHAPTER 5:
Conclusions and Recommendations

It Works!

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CHAPTER 6:
Future Work

Long term maintenance.

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REFERENCES

[1] P. J. Denning, "The working set model for program behavior", Communications of the ACM 11, 5 (May 1968), 323-333.

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