

Rethinking RAM: Testing alternative models of computation

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1 Project Summary

General Area: Models of Computation in Algorithms

Keywords: RAM, computational models, benchmark

Question: The RAM model of computation is the traditionally assumed environment of most algorithm analysis, but it is questionable whether it serves as an accurate model of modern computers. This project will experimentally test the RAM model versus the recently proposed VAT model. *Is Jurkiewicz and Mehlhorn's Virtual Address Translation model experimentally superior to the traditional Random Access Machine for modeling computational complexity?*

Responsibilities:

LACHUT

LAHIRI

Budget: \$1,000,000 (!!!)

Deliverables: Progress Report, Final Report, Presentation Slides

2 Deliverables

This project will produce four final products.

Progress Report The investigators will submit a report on the status of the research, noting significant changes to the research or newly uncovered difficulties. This report will also include a draft outline of the final report.

Final Report

Benchmark Results

Source Code

Presentation Slides The project will produce an oral presentation and accompanying slides. The presentation will be a summary of the project report noting the key findings of the research.

3 Biographical Sketch

3.1 David Lachut

3.1.1 Professional Preparation

- University of Maryland, Baltimore County Computer Science
Ph.D. 2015
- University of Arkansas Physics B.S. 2009

3.1.2 Appointments

- Research Assistant University of Maryland, Baltimore County
2012–Present
- Research Assistant University of Arkansas
2010–2012

3.1.3 Publications

- D Lachut, et al., "Minimizing Intrusiveness in Home Energy Measurement," in BuildSys '12, Toronto, ON, 2012, pp 56-63. (Best Paper Nominee)
- S Rollins, et al., "A Mobile System for Annotation of Home Energy Data," UMBC CSEE Technical Report TR-12-CS-03 [under submission]
- A Nelson, et al., "Wearable Multi-sensor Gesture Recognition in Assistive Devices for Paralysis Patients," UMBC CSEE Technical Report TR-12-CS-01

3.1.4 Collaborators and Other Affiliations

Collaborators

- Nilanjan Banerjee
Department of Computer Science and Electrical Engineering
University of Maryland, Baltimore County
- Lazeeb Choudhury
Kevin Moran
Simon Piel
Sami Rollins
Yucheng Xiong
Department of Computer Science
University of San Francisco

Graduate Advisor

- Nilanjan Banerjee
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3.2 Kaustav Lahiri

3.2.1 Professional Preparation

- University of Maryland, Baltimore County Computer Science
- University of

3.2.2 Appointments

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3.2.3 Publications

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3.2.4 Collaborators and Other Affiliations

Collaborators

- Collab
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Graduate Advisor

- Adv
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