The Final Oral Examination for the Degree of
DOCTOR OF PHILOSOPHY
Computer Science

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2007 University of Victoria MSc
2004 University of Victoria BSc

“Isolating Legacy Applications with Lind”

March 15th, 2013
1:30 pm
Engineering/Computer Science Bldg., Room 660

Supervisory Committee:
Dr. Yvonne Coady, Department of Computer Science, UVic (Co-Supervisor)
Dr. Stephen Neville, Department of Electrical and Computer Engineering, UVic (Co-Supervisor)
Dr. Patrick McGeer, Department of Computer Science, UVic
Dr. Kin Fun Li, Department of Electrical and Computer Engineering, UVic (Outside Member)

External Examiner:
Dr. Alistair Veitch, Hewlett-Packard Laboratories

Chair of Oral Examination:
Dr. Emmanuel Herique, Department of French, UVic
Abstract

Legacy applications, often written in C, can be riddled with bugs. Sarcastically referred to as "veritable bug ranches", pre-existing legacy applications of substantial size and complexity are still commonplace on today's computers. In this thesis, I motivate, build and evaluate Lind, a sandbox for legacy applications. Lind decreases the impact of buggy programs on the system that runs them. It does this without changing their code or destroying the non-functional characteristics of the programs—such as performance, portability, lightweightedness and ease of deployment—which are the primary motivators for legacy software written in C. Lind borrows many principles of secure system design to help it isolate legacy applications so they cannot impact the rest of the system. To assess Lind, I evaluate how well legacy applications perform in Lind, how strong the isolation Lind provides is, and how easy it is to port applications to Lind—all to conclude that Lind is a viable proof-of-concept platform for legacy applications.

Awards, Scholarships, Fellowships

Google Summer of Code 2009 (sponsored by the Eclipse Foundation)

University of Victoria Fellowship, 2004–2005

Raytheon Canada Limited Scholarship

UVic Computer Science Public Speaking Award
Presentations

Matthews, C.; and Warfield, A. "Securing Legacy Systems with Federated Macrocomponents" University of British Columbia Virtualization and Security Summit.

Matthews, C. "MacroComponents" Invited speaker at HP Labs Palo Alto.


Publications


