PROGRAMME

The Final Oral Examination for the Degree of

DOCTOR OF PHILOSOPHY
Department of Computer Science

Jennifer Baldwin
2006 University of Victoria MSc
2004 University of Victoria BSc

“Building Program Comprehension Tools for Assembly Language: Fundamental Disparities with a Universal Approach”

Thursday, February 13, 2014
9:30 a.m.
Engineering/Computer Science Bldg. (ECS), Room 468

Supervisory Committee:
Dr. Yvonne Coady, Department of Computer Science, UVic (Supervisor)
Dr. Margaret-Anne Storey, Department of Computer Science, UVic (Department Member)
Dr. Alex Thomo, Department of Computer Science, UVic (Department Member)
Dr. Stephen Neville, Department of Electrical and Computer Engineering, UVic (Outside Member)

External Examiner:
Dr. Radek Marik, Czech Technical University

Chair of Oral Examination:
Dr. Juan Ausio, Department of Biochemistry and Microbiology, UVic
Abstract
Advances in software engineering and programming languages have had an impact on productivity, time to market, comprehension, maintenance and evolution of software in general. Low-level systems have been largely overlooked in this arena, partially due to the complexities they offer and partially due to the inherent “bare bones” culture in this domain.

This thesis investigates the pain points present for two stakeholder groups using different assembly languages: a mainframe development group and a malware analysis group. While their requirements appear similar at a high-level, a detailed study reveals that the truth is much more complicated. As a proof of concept, we have created the AVA (Assembly Visualization and Analysis) tool framework, which is independent of the underlying assembly language. Despite this independence, tools within AVA could not be applied with equal efficacy, even just within these two stakeholder groups. This thesis shows that fundamental disparities with a universal approach not only stem from substantial diversity in the assembly languages involved, but also in the nature of each group’s work.

Awards, Scholarships, Fellowships
2013 Internet Services and Methods Thereof (patent)
2013 Automatically Generating REST Clients from REST Resources (patent)
2011 Representational State Transfer (REST) Service Import Editor (patent)
2011 Hex-Rays Plug-In Contest 2011: First Place
2008 RadWebTech’s Best Mashup, Mashup Camp, Mountain View

Presentations


Baldwin. J.; "Are Patches Cutting it? Structuring Distribution within a JVM using Aspects" In *Proceedings of the IBM Center for Advanced Studies Conference (CASCON)*, Markham, ON, 2005.

**Publications**


Baldwin, J.; Coady, Y.; "Are Patches Cutting it? Structuring Distribution within a JVM using Aspects" In Proceedings of the IBM Center for Advanced Studies Conference (CASCON), Markham, ON, 2005.