

Skills Overview

Object Oriented	Java, Scala, C++ and C#	Academic Research, Courses, Personal Projects
Scripting	PERL and Bash scripting	Designing testing frameworks in Industry (Blue Coat)
Logic	Prolog, Alloy, Clafer	Predicate logic and relational model design in Academic Research & Courses
Programming		
Database	SQL, JSP, Servlets	Created a dynamic, optimized & concurrent patient record management system for Database Course
Embedded	VHDL, C, C++	Hardware design on Altera DE2 and Xilinx ARM Processor in Courses
Programming		
Web Design	HTML, CSS, PHP, CakePHP	Personal projects and designing corporate website for DataSoft Systems http://www.datasoft-bd.com
Model Checking & Algorithms	Static Analysis of relational models using formal logic and writing layout algorithms for graph based data visualization	
AI and Machine Learning	Modelling Bayesian learning algorithms & exploring Bayesian and Markov Network analysis techniques in MATLAB for course and academic research	
Testing Framework	Industry standard testing framework design experience during 8 months co-op term at Blue Coat Systems	
Design	JUnit test suite creation for research and private projects	

Research Internships

- Jan 2013 - April 2013 **Undergraduate Research Assistant, University of Waterloo, Waterloo, ON.**
- Working with Dr.Derek Rayside on the multi-objective optimization algorithm called *Guided Improvement Algorithm* by exploring various SAT solver optimization techniques and search optimization algorithms.
 - Creating a generic scheduling application using the *Alloy* modelling language for *The Whitehead Institute* in MIT.
 - Most of the work involved was done in Java, MATLAB, Alloy and Clafer APIs.
- May 2012 - August 2012 **Undergraduate Research Assistant, University of Waterloo, Waterloo, ON.**
- Working with Dr. Derek Rayside on extending the Java based graph model visualizer for 'Alloy'. <http://alloy.mit.edu/alloy/>
 - Inferencing model properties such as relation arity, skolemization and type hierarchy dependency using formal logic and creating visually pleasing layout and draw algorithms
 - Extensive use of several java drawing libraries eg. `java.awt.*`, to implement graphic features and visual simplification techniques
 - The relational logic visualization project is currently in preparation for journal publication
- May 2010 - Aug 2010 **Research Project Associate, DataSoft Systems Ltd, Dhaka, Bangladesh.**
- Research experience working under Dr. Maqsdul Alam of University of Hawaii on jute genome synthesis research, in collaboration with DataSoft.
 - Responsibilities included perl scripting to assist research data analysis. Creating and maintaining a 28 core cluster computer for high performance processing.

Work Experience

- Sept 2011 - Jan 2012 **Automation Framework Engineer**, *Blue Coat Systems Inc.*, Waterloo, ON.
- Individual responsibilities included extending the perl based dynamic automation testing framework to create a new real-time web reporting module for the daily automated test runs
 - Active programming experience in object oriented perl and bash, relational database querying using SQL as an extension for the reporting module project
 - Interaction with senior programmers in design compatibility analysis and code review
- Jan 2011 - April 2011 **Quality Assurance Engineer**, *Blue Coat Systems Inc.*, Waterloo, ON.
- Engineering test suites for proxy server appliance using the perl based testing framework.
 - Understanding of different network protocols and ad-hoc data propagation to resolve and fix bugs

Career Interests

- Data & Knowledge Modelling & Analysis Interested in application of self taught knowledge and exploration of machine learning & artificial intelligence, primarily from reference books, online & in-classes courses.
- Relation Models & Logic I am interested in exploring their application in industrial *Data Mining and Knowledge Modelling*
- Continue current research interest and explore further implementations of Alloy models and their powerful SAT solving and optimization engine in broader disciplines, potentially in the area of AI and Learning

Relevant Academics

- OS and Embedded Programming Completion of academic project to program a 'Space Invader Game' on a Xilinx ARM processor using kernel level C and concepts including scheduling, memory management, concurrency and driver development
- Compilers Created a compiler and simulator for VHDL using Java.
Project included exploring multiple object-oriented design paradigms and using the *Parboiled* parser-generators
- Artificial Intelligence Implemented Bayesian Network, Bayesian Learning Algorithm, Decision Networks and Markov Decision Process using Matlab
- Static Analysis & Model Checking Experience in techniques of static and dynamic analysis of programs and models from graduate level coursework and research internship

Accolades

- Academic Scholarship Received Engineering scholarship & International Student Scholarship for Academic Excellence, 2009
- United Nations Awarded the Volunteer of the Year Award 2008/2009 for UN Youth & Student Association of Bangladesh for successfully managing several awareness campaigns and events and showing exceptional creativity

Faculty Reference

- Derek Rayside Assistant Professor, University of Waterloo
drayside@uwaterloo.ca
<https://ece.uwaterloo.ca/~drayside/>
☎ +1 226 218 5243