Louis Dionne

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Education

Jan 2013 – present **B.Sc Mathematics**, *Université Laval*, Québec.

Experience

2012 **Intern**, *Coveo Solutions*, Québec.

- Conception and implementation of a deadlock detection system for internal use
- Presentations on C++ techniques and idioms to co-workers:
  - The Boost.ConceptCheck library and associated TMP techniques
  - C++11 rvalue references

2010 **Intern**, *Department of Electrical Engineering of Université Laval*, Québec.
Organization of the 10th international conference on Quantitative Infrared Thermography (QIRT)

Personal Projects

d2 **Conception and implementation of a deadlock detection system in C++**
Detects deadlocks that would have happened under different thread scheduling conditions by performing intrusive dynamic analysis on a non-deadlocking run of a program. Additionally, provides satistics about lock and thread usage.

mpl11 **Reimplementation of a subset of the Boost.MPL library using C++11**
Reimplemented the "composition and argument binding" subset of the Boost.MPL library and some of Boost.MPL's algorithms as variadic templates so that they operate directly on lists of template parameters instead of Boost.MPL containers.

joy **Implementation of a preprocessor metaprogramming library**
Implemented associative sequences and other utilities for preprocessor metaprogramming on top of the Chaos preprocessor library.

nstl **Conception and implementation of a generic algorithm library in pure C**
Implemented a basic name mangling system and "preprocessor-based classes" using PMP techniques. Using these facilities, implemented a subset of the C++ standard library algorithms. The result is a collection of generic algorithms instantiable and usable from pure C without sacrificing type safety or performance by using traditional techniques like pointers to void.

duck **Implementation of a minimal concept-based overloading library**
Implemented a subset of Boost.ConceptCheck's concepts as metafunctions, which allows overloading based on the modeling of a concept by a type.

cisp **Implementation of a minimalist object system with the preprocessor**
Created a system to manipulate complex preprocessor objects using associative sequences imbued with object semantics.

nstl-lang **Implementation of a translator for a toy language in Python**
Implemented basic parsing, semantic analysis and code generation to C.

Contributions to other projects

- Proposal of a new output iterator for the Boost.Iterator library (under review)
- Patches to Boost from time to time (mostly Boost.Spirit and Boost.Graph)
- CMake port of the FastPFor integer compression library's build system

Languages

Fluent French, English

Basic Spanish, Russian, German, Swedish