

# YURIY SOLODKYY

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## OBJECTIVE

Looking for full-time job opportunities involving programming languages research, compilers, program analysis and verification.

## RESEARCH INTERESTS

C++, generic programming, abstract interpretation

## EDUCATION

### Ph.D. in Computer Science (GPA: 3.91)

Texas A&M University (USA), August 2013

Focus: C++, generic programming, program analysis, abstract interpretation, compilers and tools

Dissertation: "*Simplifying the Analysis of C++ Programs*"

Advisor: Dr. Bjarne Stroustrup

### M.S. in Computer Science, Honors diploma (GPA: 3.87)

Taras Shevchenko University of Kiev (Ukraine), 1999

Focus: Theory of compilation, algorithms

Thesis: "*Interpreter of Job Description Language for Win32 Platform*"

Advisor: Dr. Volodymyr Protsenko

### B.S. in Computer Science (GPA: 3.84)

Taras Shevchenko University of Kiev (Ukraine), 1998

Focus: Formal languages and automata, algorithms

## SUMMARY OF EMPLOYMENT

### Texas A&M University (USA)

Research Assistant (06/2006 - 08/2013)

Project: *Mach7* - pattern matching library for C++

Accomplishments: Implemented open and efficient type switch for C++, extended it to complete pattern-matching solution. Documented results in 2 papers. <http://parasol.tamu.edu/mach7/>

Project: *SAIL* - an abstract interpreter for C++ built on top of the Pivot  
Accomplishments: Implemented basic infrastructure of the interpreter for non-relational domains, which can handle all of the control structures and does not require user to work directly with AST of a program.

Project: *Multima* - open multi-methods for C++

Accomplishments: Implemented our proposed multi-methods extension inside the EDG C++ front-end. Documented results in 2 papers and a technical report.

Project: *XTL* - a framework for refining C++ type system with domain-specific subtyping relation

Accomplishments: Implemented the library and successfully applied it to modeling type qualifiers and regular expression types within C++.

Documented results in 2 papers. <http://parasol.tamu.edu/xtl/>

Project: *Pivot* - a framework for analysis of C++ programs

Accomplishments: Implemented XPR parser for the framework using GNU Flex and GNU Bison. Added visualization of the IPR via Graphviz. Created scripts for automated testing of the Pivot framework.

<http://parasol.tamu.edu/pivot/>

Graduate Assistant non-teaching (01/2006 - 01/2007)

Research Assistant (09/2004 - 08/2005)

Responsibilities: Development of iterators for distributed containers in STAPL, working on some parallel algorithms

Accomplishments: Made possible to run STL algorithms on STAPL's distributed containers by implementing iterator, capable of crossing process boundaries.

### Microsoft (USA)

SDE Intern Visual C++ & Phoenix teams (06-08/2007 & 05-08/2008)

Responsibilities: Code generation from Visual C++ and Pivot's AST into Phoenix HIR

Accomplishments: Implemented code generation for C subset of the C++ for both representations. The code was able to compile the C compiler quality test benchmarks and run it with no differences in output from code generated by other compilers.

### Quadrox NV (Belgium)

Project leader (01/2002 - 08/2004)

R&D Engineer (12/1999 - 01/2002)

Responsibilities: Management of a team of 7 developers. Design of system's architecture, intercommunication protocols, mechanisms and interfaces. Writing specifications, internal standards, guidelines etc. Research and development.

Accomplishments: Under my leadership, WebCCTV-3 was brought to the market and turned into a competitive product. Major improvements included support of heterogeneous capturing hardware, variety of industry standards (ASF/WMV, MPEG4, AVI), improved frame rates and streaming quality.  
Demonstration: <http://www.webcctv.com/>.

### Centre of State Land Cadastre (Ukraine)

Software developer (03/1999 - 12/1999)

Responsibilities: Design and support of database structure. Development of application's framework, functionality and UI.

Accomplishments: Helped normalize database structure, ported existing code from Delphi to C++ Builder, developed import module and GUI.

## HONORS AND AWARDS

- 1<sup>st</sup> prize in TAMU Student Research Week poster competition for "Open Pattern Matching for C++" (2013)
- Oregon Programming Languages Summer School (2012)
- Marktoberdorf Summer School on "Software and Systems Safety: Specification and Verification" (2010)
- Association Of Former Students Award (2010)
- Richard E. Morris Academic Excellence Award (2007)
- Verizon scholarship (2006)
- IAP scholarship sponsored by Adobe (2005)

## PUBLICATIONS

- Y.Solodkyy, G.Dos Reis, B.Stroustrup. "*Open Pattern Matching for C++*" Proceedings GPCE'13, October 27-28, 2013, Indianapolis, USA
- Y.Solodkyy, G.Dos Reis, B.Stroustrup. "*Open and Efficient Type Switch for C++*" Proceedings OOPSLA'12, October 19-26, 2012, Tucson, USA
- Y.Solodkyy, J.Jarvi. "*Extending Type Systems in a Library: Typesafe XML-processing in C++*", Science of Computer Programming, 2010
- J.Smith, Y.Li, Y.Solodkyy, G.Dos Reis, J.Jarvi. "*Supporting Local Specialization in a Categorical Computer Algebra System by Abstract Interpretation*". Technical Report, Texas A&M University, 2009.
- P.Pirkelbauer, Y.Solodkyy, B.Stroustrup. "*Design and evaluation of C++ open multi-methods*", Science of Computer Programming, 2009
- P.Pirkelbauer, Y.Solodkyy, B.Stroustrup. "*Open multi-methods for C++*", Proceedings GPCE'07, October 01-03, 2007, Salzburg, Austria
- P.Pirkelbauer, Y.Solodkyy, B.Stroustrup. "*Report on language support for Multi-Methods and Open-Methods for C++*". SC22/WG21, 2007.
- Y.Solodkyy, J.Jarvi, E.Mlahi. "*Extending Type Systems in a Library - Type-safe XML processing in C++*". In Workshop of Library-Centric Software Design at OOPSLA'06, Portland Oregon, October 2006

## SKILLS *n = months of experience, sorted by active knowledge*

### Programming languages / formal languages:

C++<sup>160</sup> (>500K LOC), C<sup>24</sup>, C++/CLI<sup>7</sup>, OCaml<sup>4</sup>, Coq<sup>1</sup>, C#<sup>2</sup>, Object Pascal<sup>60</sup>, JScript<sup>15</sup>, VBScript<sup>12</sup>, SQL<sup>28</sup>, XML<sup>8</sup>(XSLT<sup>4</sup>, XPath<sup>2</sup>), DHTML<sup>16</sup>, Lisp<sup>5</sup>, Prolog<sup>5</sup>, Java<sup>2</sup>, IDL<sup>48</sup>, Matlab<sup>4</sup>, Open Axiom<sup>4</sup>

### Technologies:

.NET<sup>7</sup>, COM<sup>48</sup>, DirectShow<sup>36</sup>, Windows Sockets<sup>24</sup> 2, Windows Security SDK<sup>24</sup>, MPI<sup>4</sup>, ASP<sup>16</sup>, ColdFusion<sup>5</sup>

### C++ Libraries:

STL<sup>120</sup>, MPL<sup>24</sup>, Phoenix RDK<sup>7</sup>, EDG C++ front-end<sup>6</sup>, ATL<sup>36</sup>, WTL<sup>12</sup>, MFC<sup>12</sup>, VCL<sup>9</sup>, STAPL<sup>11</sup>, IPP<sup>6</sup>

### Debugging and Performance Analysis Tools

Visual C++ Debugger<sup>144</sup> and Profiler<sup>20</sup>, GDB<sup>12</sup>, CodeAnalyst<sup>5</sup>, gprof<sup>4</sup>, Dependency Walker<sup>24</sup>, Total View<sup>4</sup>, NuMega BoundsChecker<sup>24</sup>

### RDBMS and data management:

MS SQL<sup>15</sup>, MS Access<sup>2</sup>, ADO<sup>16</sup>, ODBC<sup>7</sup>, MSXML<sup>8</sup>, InterBase<sup>7</sup>, BDE<sup>9</sup>

### Integrated Development Environments and Tools:

Visual C++<sup>144</sup> 6.0-11.0, G++<sup>84</sup> 2.95-7.0, Flex<sup>60</sup>, Bison<sup>60</sup>, C++ Builder<sup>7</sup> 4.0, Visual InterDev<sup>12</sup> 6.0, Delphi<sup>16</sup> 2.0-4.0, Borland C<sup>4</sup> 3.1, Borland Pascal<sup>60</sup> 5.5-7.0, PDC Prolog<sup>5</sup>, IBM muLisp<sup>5</sup> 85 5.0, Eclipse<sup>4</sup>, KDevelop<sup>3</sup>, Anjuta<sup>7</sup>, Data Access SDK<sup>16</sup> (BDE, ADO), MIDL<sup>48</sup>, GraphViz<sup>60</sup>, DoxyGen<sup>96</sup>, HTML Help Compiler<sup>80</sup>, DreamWeaver<sup>24</sup>

### Operating Systems:

Windows (8/7/Vista/XP/2000/98/NT), Windows Phone (7.x), Linux (RedHat 9/Fedora 3/CentOS), DOS (MS/PC)

## OTHER

### LANGUAGES

Native speaker of Ukrainian and Russian, fluent in English, intermediate in French and Dutch

### WORK AUTHORIZATION

U.S. Permanent Resident, authorized to work in the United States