Alexander Tsvyashchenko

Personal Data

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Objective

Apply my talent, knowledge and experience in research and development of challenging, "algorithm-rich" projects to meet or exceed customer expectations and ensure further self-growth.

Profile

- Able to perform and guide practical and results-driven research for complicated problems.

- Can architect, design and implement complex systems using multiple technologies and languages.

- Have practical experience processing large data sets, performing complexity analysis, optimizing performance and memory usage, parallelizing algorithms.

- Can comprehend and work with large-scale software projects (millions lines of code).

- Have broad experience with end-to-end ownership / full software development life cycle.

- Managed teams of up to 6 people, strove for establishment or enhancement of management and development processes whenever that supported company goals.

- Able to acquire new problem domains, technologies and languages quickly and thoroughly.

- Can efficiently work both highly autonomously and in the team.

- Able to explain complex technical matters in simple words to customers / upper management, present the most relevant results, support decision making.

- Have successful experience in communication with customers in all areas related to SDLC, met or exceeded expectations in most projects.

- See the "bigger picture" to ensure long-term advantages for the company.

Skills Summary

DOMAINS:	Advertisement & traffic quality, CAD/CAM, computational geometry, images & videos processing, computer vision, networking, rapid prototyping, wire bending, XMPP.
PARADIGMS:	Object-oriented, generic, structured, functional, logical, actor model.
LANGUAGES:	C++, C#, C, Python, Erlang, VB.NET, Ruby, Perl, SQL, Java, Haskell, Lua, Tcl, Pascal, Assembler (x86), Lisp, Prolog.
TECHNOLOGIES:	OOD, DDD, UML; OpenMP and "generic" multi-threading; .NET Framework (incl. WPF, LINQ); OpenGL; RDBMS (MySQL, PostgreSQL, SQLite); Ruby On Rails; HTML, CSS, XML; LaTeX.
OPERATING SYSTEMS:	Windows, Linux (multiple distributions, including embedded), Mac OS X, FreeBSD.
LIBRARIES:	Boost, Loki; Bullet; CGAL; GTS, OpenMesh; Infragistics NetAdvantage, Qt, wxWidgets, Tao; ITK, VTK; OpenCASCADE; OpenCV; QuickGraph; WildMagic; Wt.
CODE QUALITY:	CCCC, CppCheck, Vera++; ClockSharp, FxCop, StyleCop; PMD (CPD), Simian.
TOOLS:	AQTime, CodeAnalyst, DevPartner, Rational Quantify; Doxygen, Sandcastle; Gallio; Incredi-Build; QEMU, VirtualBox, VMWare; SWIG; T4; Wix.
SCM:	CruiseControl.NET, Hudson; Git, Subversion; CMake, MSBuild, Make, Jam, Automake / Autoconf; Redmine, Trac.
ENVIRONMENTS:	Microsoft Visual Studio 98 - 2010, GCC and Clang toolchains (native and cross-compilation to multiple embedded platforms), NetBeans (Erlang), Qt Creator (VS 2010 & GCC).
GOOGLE:	Multiple technologies and products for parallel processing / cluster computing, remote storage & data analysis.

Professional Experience

Software Engineer   AUG 2011 - PRESENT
Google / Ad Traffic Quality team, Zürich, Switzerland

- Ad traffic analysis to detect abusive / fraudulent patterns.
- Ad traffic quality signals, metrics and filters development.
- Led ad fraud botnets fighting efforts, including external information sharing and collaboration (e.g. BotConf-2014 presentation).
- SKILLS: C++, Python; multiple Google-internal technologies, languages and products.

Chief Scientist   FEB 2010 - AUG 2011
Deebmedia, Amsterdam, Netherlands

- Responsible for the whole video processing and algorithmic stack: architecture and design, algorithms selection, implementation.
- In particular, research and implementation of robust, online algorithms for video background reconstruction in complex scenes and highly accurate object tracking.
- SKILLS: C++, Lua; multi-threading; boost, ITK, OpenCV, Qt; SWIG; Redmine, Subversion, CMake, Hudson, Simian, Vera++; Mac OS X.

Senior Software Engineer / Project Manager (independent contractor)   NOV 2005 - JUL 2011
Automated Industrial Machinery, Inc, Chicago, IL

End-to-end ownership of the following projects:

- Specialized photogrammetric system   Oct 2009 - Jul 2011
  - Researched and made all the decisions on system design, hardware components and algorithms to be used.
  - Constructed hardware system prototype.
  - Designed and implemented universal camera communication layer and camera calibration procedure.
  - Researched and implemented photogrammetric reconstruction algorithms.
  - SKILLS: C#, C++; .NET / WPF; boost, CGAL, ITK, OpenCV, OpenMesh, Loki, WildMagic; Gallio, T4; Hudson, Redmine, Subversion.

- BenderCad project: CAD system for wire bending industry   Aug 2007 - May 2009
  - Designed and implemented data-driven, flexible and extensible CAD framework suited for wire-specific CAD tasks.
  - Performed seamless OpenCASCADE integration with C# project for rendering and import functionality.
  - Designed and implemented uniform WinForms UI that is well separated from core functionality.
  - Managed the team of 3 sub-contractors.
  - Resulting system allows to cut model design times from days (when using conventional CAD packages) to typically less than one hour.
  - SKILLS: C#, C++; Infragistics NetAdvantage for WinForms, OpenCASCADE, Loki, QuickGraph, WildMagic; Subversion, Trac.

- **WireAnimation** project: bending machines simulation   Jan 2007 - Jul 2011
  - Designed and implemented highly configurable single code base that provides support for all different models of AIM bending machines.
  - Implemented support for complex wire-bending scenarios.
  - Managed to achieve real-time calculations, including collisions detection.
  - Resulting system allows avoiding costly / dangerous experiments on real hardware and replacing them with debugging wire bending programs in simulator.
  - SKILLS: VB.NET, C++; OpenGL; bullet, Tao; Subversion, Trac.

- **CAD Wire Import**: STEP/IGES wire models import   Nov 2005 - Mar 2006
  - Implemented reliable centerlines extraction, including work-arounds for import problems of semi-broken CAD files.
  - Resulting system greatly simplifies modeling workflow by allowing to import models prepared in traditional CAD packages directly to bending machines control software.
  - SKILLS: C++, VB.NET, VB6; OpenCASCADE, wxWidgets.

Algorithm Consultant (independent contractor)   SEP 2007 - NOV 2007
Atoms Optical Measuring, Locarno, Switzerland

- Consulted developers on numerical algorithms best suited for customer's needs.
- Researched and implemented algorithm prototype for highly accurate image segmentation.
- The developed algorithm was used as one of the key components to achieve micron-level measurements accuracy.
- SKILLS: C++; OpenMP; ITK, OpenCV, WildMagic; Subversion, Trac.

Senior Researcher / Team Leader (full-time employee)   AUG 2000 - JUL 2007
Materialise, Kiev, Ukraine

- Researched and implemented complex, high-performance algorithms and data structures in computational geometry and rapid prototyping domains that formed the core of Materialise DigitalCAD kernel.
- Integrated resulting algorithms to Materialise libraries ($\approx$ 1.5 million lines of code project), performed their maintenance, significantly improved libraries design.
- Guided research and managed research team of 6 researchers.
- Introduced multiple processes improvements in research team, including automatic testing introduction, autobuild system, code quality measurements, projects communication and documentation policies.
- Conducted trainings on Materialise libraries for the developers of Materialise products.
- Performed technical evaluation and made hiring decisions on candidates to the research team and other teams.
- Algorithms developed by research team served as the basis of principal Materialise products: Magics, Mimics, Simplant, 3-matic.
- SKILLS: C++; OpenMP, multi-threading; boost, CGAL, GTS, VTK; IncrediBuild; in-house bug-tracking system, CruiseControl.NET, Subversion, VSS.

Software Engineer   1998 - PRESENT
Multiple open-source projects

Developed multiple stand-alone open-source projects and contributed patches to existing ones, some examples are below:

- **mod_archive2**   Sep 2009 - Dec 2009
  - Integrated the necessary components to produce full development environment for Erlang-based projects, including autobuilds, automatic tests with code coverage and code quality checks.
  - Designed and implemented server-side XMPP messages archiving based on Erlang actor model.
  - Implemented universal storage access layer interfacing both RDBMS and Mnesia.
  - This project is the only complete open-source solution supporting current version of XEP-136 archiving specification.
  - SKILLS: Erlang, SQL; Mnesia; Dialyzer, ejabberd, NetBeans, MySQL, PostreSQL, SQLite; Hudson.

- **Linux bcm43xx driver master mode support**   Apr 2006 - May 2006
  - Learned IEEE 802.11 standards deeply enough to understand the way master (access point) mode works.
  - Recovered the way Broadcom Wi-Fi chipsets handle master mode using available incomplete documentation and experiments.
  - Implemented the necessary changes to bcm43xx driver to support master mode using OpenWrt-running router as target platform.
  - Fixed issues in related software components - hostapd, Linux d80211 stack.
  - Submitted and followed up the patches until they were integrated in the corresponding projects.
  - The patches became the basis for master mode support in Linux drivers for Broadcom Wi-Fi chipsets.

- SKILLS: C, IEEE 802.11, Linux.

More information on projects is available here: http://endl.ch/content/projects

EDUCATION

1997 - 2003   Master of Science in COMPUTER SCIENCE with distinction, Cybernetics Faculty, Department for Theoretical Cybernetics, *Kiev National University of Taras Shevchenko*, Kiev, Ukraine

TRAININGS & CERTIFICATIONS

- "Project management" training by INSTITUTE FOR BUSINESS DEVELOPMENT, 2007.

- "People management" training by SYNERGUY BVBA, 2007.

- "Leadership and Managerial Skills", "Team Building" trainings by AXIOMA CONSULTING, 2003.

- MASTER BRAINBENCH certificates, most scores are above 98% of other test takers: C#, C++, Project Management (2008), RDBMS Concepts, Network Security, Linux Administration (General).

LANGUAGES

RUSSIAN, UKRAINIAN: Mother tongues
ENGLISH: Fluent
GERMAN: Intermediate