Curriculum Vitae

Tomasz Rybak

Software developer involved in design, development, and deployment of software projects in Objective C and Python, using iOS, Django, PostgreSQL, Amazon and Google clouds, and GPGPU.

Contact Details

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Professional Appointments

2012.12–Present	Software Engineer at Transition Technologies
2012.06–2012.11	Software Engineer at CodiLime
2012.03–2012.05	Senior Developer at QBurst Poland
2011.03–2011.12	Research Assistant at University of Geneva
2004.10–2011.02	Teacher Assistant in the Faculty of Computer Science at Białystok University of Technology.
2003.10–2004.07	Teaching internship in the Faculty of Computer Science at Białystok University of Technology (during the last year of M.Sc.).
2002.07	Internship at Military University of Technology (Wojskowa Akademia Techniczna), Warsaw, Poland. Duties: development of module of The GEOBA GIS Software allowing it to use Microsoft Index Server via COM services.

Computer Skills

Frameworks:	iOS, Core Data, Django, AWS
Languages:	Python, Objective C, Java, C, C++, C#
Databases:	PostgreSQL, Microsoft SQL Server
Other technologies:	OpenGL, OpenCL, NVIDIA CUDA

Programming Projects

Transition Technologies mobile applications

We provide mobile applications running on Apple hardware (iPhone, iPad) for both external clients and internal divisions. Applications are available through AppStore and through individual deployments.

We work on accessibility applications for disabled people, mostly for people with sight impairment (Seeing Assistant), and on applications for industry, mostly to cooperate with energy markets. We constantly work on updating our applications, using the most current technologies, like cloud storage, Core Data, push notifications, etc.

Time period 2012.12–Present

Used Technologies Objective C and iOS, Core Data, shell scripts

Responsibilities
- Creation of applications' architecture
- Implementing applications
- Reviewing code of other programmers
- Supervision of junior programmers
- Taking part in official events on universities, representing TT

CodiLime projects

We were providing software for the external clients. I was part of the teams responsible for providing web site (implemented in Django) and distributed service (implemented in C++ and Python) providing high-availability of routing solution.

Time period 2012.06–2012.11

Used Technologies Python, C++, Unix shell, Django

Responsibilities
- Creation of applications' architecture
- Implementing applications
- Reviewing code of other programmers
- Supervision of junior programmers
- Contacting with the client discussing functional and non-functional requirements

QBurst applications

We provided solutions consisting of both mobile clients and server-side services. I was responsible for server-side part of software.

Time period 2012.03–2012.05

Used Technologies Python, Django, PostgreSQL, Unix Shell, AWS cloud

Responsibilities
- Implementation of web services used by mobile applications
- Reviewing code of other programmers
- Cooperating with mobile programmers when creating web services
- Maintaining existing applications

Allowing cooperation of Lattice-Boltzmann libraries Palabos and Sailfish

Research assistant at University of Geneva, working on joining Sailfish and Palabos projects to allow using GPU clusters for Lattice Boltzmann Modelling.

Scientific community use Lattice-Boltzmann method for simulating fluid flows. Lattice-Boltzmann Method uses grid of cells which allows for easy parallelization of computations. Sailfish is Python library written on Silesia University simulating flow using CUDA GPUs. Palabos is C++ library written on University of Geneva simulating Lattice-Boltzmann flows on CPU. During my work as Research Assistant at University of Geneva I was responsible for creating hybrid solution running computations on CPU and GPU, using both Palabos and Sailfish.

Time period 2011.03–2011.12

Used Technologies Python, C++

Responsibilities
- Cooperation with other team members with design and architecture of Palabos-Sailfish solution
- Implementation of code joining Palabos and Sailfish
- Taking care of performance of resulting solution, limiting number of data transfers and amount of transferred data

University-related projects

System for managing thesis topics and defences at the faculty

Computer Science faculty of Białystok University of Technology uses computer system to manage students' theses, from subject proposals up to thesis defence and report printing. Every step can be done online using web browser.

Time period 2008.10–2011.02

Used Technologies Java, JSF, JEE, JBoss, PostgreSQL

Responsibilities
- Design of database schema, creation of all database objects
- Educating end users (students and faculty staff) about system usage
- Administration of Linux server running system
- Deployment of created Java packages

System for performing programming contests

Every year Computer Science faculty of Białystok University of Technology organises programming contest for local high schools students and students of Computer Science. Contest is managed using computers; participants send solutions using web-based system, and those solutions are compiled, run, and compared against test data on our servers. I was part of the team which created checker system; another person was responsible for the web interface.

Time period 2004.03–2010.10

Used Technologies C++, PostgreSQL, Apache

Responsibilities
- Design of database, creating database objects
- Designing and writing service responsible for compiling solutions, checking their correctness and safety, running programs and checking their time constraints
- Deploying and administering of the system during contest

System to perform computerized exams to Introduction to Programming

Final exam for Introduction to Programming course in Computer Science faculty of Białystok University was performed using computer system. Students were supposed to write computer programs and submit them to computer system which would grade them; system was based on WebCAT from Virginia Tech University.

Time period 2007.02–2009.03

Used Technologies Perl, Java, Unix shell, Tomcat, Apache

Responsibilities
- Designing and developing WebCAT plugin for checking exams
- Preparing data sets used during exams
- Administering servers used during exams
- Educating end users (students and faculty staff) about system usage

Other projects

2004   The master's thesis project, written in Perl and Scilab. The system takes human brain signals (EEG) and uses evoked potentials (a form of averaged signal focused on patient's stimuli) and uses multidimensional statistical techniques (principal components and multivariate linear regression) to try to discover patterns or similarities between patients.

2003   A proxy system which filters the HTML content. User logs on the server, and all HTTP requests are forwarded by the server. The received HTML file is parsed and target of every anchor tag is substituted with URL of the filtering server. The system is able to log every user activity, deny access to specific sites, specific content (disallowing selected Content-type headers), and is removing selected (potentially dangerous) HTML tags from transferred pages. The system is implemented in Perl, and runs using Apache and MySQL, where configuration and logs are stored in the MySQL database.

Open Source projects and activities

Debian cloud

Debian cloud team is responsible for cooperation with various cloud providers, including Amazon AWS and Google GCE. We maintain code for building official Debian virtual machine images to be used in various clouds, and for code for configuring Debian running in such an environment.

Time period 2013.09–Present

Used Technologies Python, Unix shell

Responsibilities　• Implementing new functionalities
- Sending patches with bug fixes

PyCUDA and PyOpenCL

PyCUDA is open source Python wrapper for CUDA (NVIDIA technology allowing for using graphics cards as computing devices); PyOpenCL is open source Python wrapper for OpenCL, technology similar to CUDA, but allowing to run the same code on heterogeneous devices (CPU, GPU, FPGA). Both were created by Andreas Kloeckner, and are widely used to run intensive computations on GPUs.

Time period 2010.09–Present

Used Technologies Python, C++, Unix shell

Responsibilities　• Active member of PyCUDA/PyOpenCL community, helping other users on mailing lists
- Sending patches with bug fixes
- Implementing new functionalities

Packaging PyCUDA and PyOpenCL for Debian

Maintainer of Debian packages python-pytools, python-pyopencl, and python-pycuda (since 2011.08) allowing to access the OpenCL and CUDA parallel computation API from Python.

Debian Linux distributes software through packages. Each program is divided into one or more packages, and each package provides some functionality, and depends on functions provided by other packages. This allows for automatic installation of software and all its dependencies. There are many groups responsible for different packages, e.g. Java packages, GIS-related packages, database packages, and so on.

Time period 2010.07–Present

Used Technologies Python, Perl, C++, Unix shell

Responsibilities　• Member of Debian Python Task Force, responsible for python-pytools, python-pycuda, python-pyopencl packages
- Taking care of keeping packages up to date, uploading new versions into Debian (after becoming Debian Maintainer), sending new versions to sponsor for review (before becoming Debian Maintainer)
- Discussing packaging efforts on mailing lists

Other projects

2005　Creation of the library which automatically generates the code for database connections in C#/.NET. The generator class takes interface as a parameter, finds its methods via reflection, and creates the class with wrapper methods. Every method calls the procedure of the database: http://bogomips.w.tkb.pl/
Creation of the library which automatically generates the code for database connections in C#/.NET. The generator class takes interface as a parameter, finds its methods via reflection, and creates the class with wrapper methods. Every method calls the procedure of the database.
C#, .net code inspection, PostgreSQL

Education

2011.03–2011.12	Research Assistant at University of Geneva
2010.08	Participation in BaSoTI 6, summer school organised by Rostock University and Kaunas Technical University.
2004.10–2011.02	Teaching Assistant at Białystok University of Technology
2004.03	Passed Microsoft exams 70-315 and 70-320, earning title "Microsoft Certified Application Developer".
2004.01	Passed Microsoft exam 70-229, earning title "Microsoft Certified Professional".
2003.10	Training "Programming with Microsoft ADO.NET" (No. 2389) and "Developing XML Web Services Using Microsoft ADO.NET (No. 2524)".
2003.07	Training "Developing Microsoft ASP.NET Web Applications (No. 2310)".
1999.10–2004.06	Master of Science at the Faculty of Computer Science at Białystok University of Technology. Thesis "Usage of multi-dimensional data analysis in analysing of signals" (in Polish) defended with honours.
1995.09–1999.06	High School No V in Białystok, with honours

Honours and Awards

- 2010 — 3rd order rector organisational award

- 2009 — 3rd order rector organisational award

- 2008 — 2nd order rector organisational award

- 2004 — Defended Master of Science thesis with honours

- 2003 — The Best Student of the Białystok University of Technology award

- 2002 — The Best Student of the Białystok University of Technology award

- 1999 — Finished high school with honours

Organisation Activities

2012–Present	Debian Maintainer
2003–Present	Professional member of Association for Computing Machinery.
2008–2011	Member of Committee for Promotion of the Faculty of Computer Science of Białystok University of Technology.
2005–2011	Member of the Faculty admission committee.
2010.04	Co-organizer of 9th Regional Collegiate Programming Contest.
2009.03	Co-organizer of 8th Regional Collegiate Programming Contest.
2008.04	Co-organizer of 7th Regional Collegiate Programming Contest.
2007.03	Co-organizer of 6th Regional Collegiate Programming Contest.
2006.04	Co-organizer of 5th Regional Collegiate Programming Contest.
2005.03	Co-organizer of 4th Regional Collegiate Programming Contest.
2003.10–2004.06	President of Students' Research Circle at the Faculty of Computer Science of Białystok University of Technology.
2003.10–2004.06	President of Grupa.NET section of Circle.
2004.04	Co-organizer of 3rd Regional Collegiate Programming Contest.
2004.03	Co-organizer of 1st Regional Computer Education Forum.
2003.11	Participation in The 2003 ACM Central European Programming Contest.
2003.10	Participation in 8th Polish Academic Collegiate Programming Contest.
2003.04	Co-organizer of 2nd Regional Collegiate Programming Contest.
2002.10–2003.06	Secretary of Student Dancing Club Feniks
2002.11	Participation in The 2002 ACM Central European Programming Contest.
2002.10	Participation in 7th Polish Academic Collegiate Programming Contest.
2002.05	Co-organizer of 1st Regional Collegiate Programming Contest.
2002.04	Founding member of Scientific Circle of Students at the Faculty of Computer Science of Białystok University of Technology.

Publications

- T. Rybak " Using GPU to improve performance of calculating recurrence plot", Zeszyty Naukowe Politechniki Białostockiej. Informatyka 6, pp. 77-94, 2010

- T. Rybak, R. Mosdorf "User activity detection in computer systems by means of Recurrence Plot analysis", Zeszyty Naukowe Politechniki Białostockiej. Informatyka 5, pp. 67-86, 2010

- T. Rybak, R. Mosdorf "Computer users activity analysis using recurrence plot" at International Conference on Biometrics and Kansei Engineering : ICBAKE 2009, pp. 189–194 Cieszyn, Poland, 2009

- T. Rybak "Using temporal process model to recover lost data", Zeszyty Naukowe Politechniki Białostockiej. Informatyka 3, pp. 111-127, 2008

- T. Rybak "Analysis of 23C3 Sputnik data" at Volldampf voraus!: 24th Chaos Communication Congress, pp. 20–51 Berlin, Germany, 2007

- T. Rybak "Problems with storing temporal data", Zeszyty Naukowe Politechniki Białostockiej. Informatyka 2, pp. 121-140, 2007

- T. Rybak "Using temporal relational database to store and manage program's execution paths" in Proceedings of the 16th International Conference on Systems Science, vol. 2, pp. 327–336, Wrocław, Poland, 2007

- T. Rybak "Streaming multimedia files from relational database" at II Konferencja Naukowa: Technologie przetwarzania danych, pp. 558-569, Poznań, Poland, 2007

- T. Rybak "Using object/relational mapping system for analysis of program execution" at 2nd Polish and International PD Forum-Conference on Computer Science: PD FCCS 2006, Smardzewice, Łódź, Poland, 2006

- T. Rybak "Cooperation of Zope an Mozilla — generation of XUL using Zope" (in Polish "Współpraca Zope i Mozilli — generowanie XUL przy wykorzystaniu Zope"), Software Developer's Journal, 2006.03, pp. 14–23

- T. Rybak, L. Bobrowski "Modelling of electronic human communication using semantic web" (in Polish, "Zagadnienia modelowania elektronicznej komunikacji międzyludzkiej za pomocą sieci semantycznych") at Symulacja w badaniach i rozwoju: XII Warsztaty Naukowe PTSK, pp. 234–240, Krynica Morska, Poland, 2005

Public presentations

- "Observe yourself — help your goverment" at Observe. Hack. Make. 2013, Oudkarspel, Netherlands, 2013

- "PyCon Ukraine 2012 — my remarks" (in Polish) at PyWaw, Warsaw, Poland, 2012

- "PyOpenCL — unleash your GPU with the help of Python" at PyCon Ukraine, Kiev, Ukraine, 2012

- "Asynchronous and event-driven PyOpenCL programming" at PyCon Poland, Kielce, Poland, 2012

- "Computation of Lattice Boltzmann in CPU and GPU heterogeneous environment" at 8th International Conference for Mesoscopic Methods in Engineering and Science, Lyon, France, 2011

- "Privacy implications of analysis of data describing movement of conference attendees" at XVI Warsztaty Naukowe PTSK: Symulacja w badaniach i rozwoju, Bobrowa Dolina, Poland, 2009

- "View from the orbit: what can be seen when looking at Sputnik data" at Hacking at Random 2009, Eidhoven, Netherlands, 2009

- "Jak się odnaleźć - i co z tego wynika" (in Polish), at Podlaski Festiwal Nauki i Sztuki, Białystok, Poland, 2009

- "Analysis of human mobility patterns" at III Konferencja : Technologie eksploracji i reprezentacji wiedzy, Hołny Mejera, Poland, 2008

- "Usage of many PostgreSQL instances at one time" (in Polish), Białystok Linux User Group, 2005

- "Usage of LiveCD EduLinux in education" (in Polish) at 1st Regional Computer Education Forum, Białystok, Poland, 2003

- "SGML: Good or Bad" and "Early web technologies: CGI and SSI" — two lectures (in Polish) at Faculty Internet Technology Workshop, Białystok, Poland, 2002

Teaching responsibilities

In the most of the following courses, I am one of the teaching assistants responsible for teaching laboratory part.

- Open Source Frameworks for Rapid Application Development, 2010. The lecture is taught in English, and I am one of the three persons responsible for preparing and teaching. Elective course

- Introduction to Programming, 2004–2011

- Object-Oriented Programming, 2005–2011

- Programming Paradigms, 2008–2009

- Expert Systems, 2004–2007

- Inter-program communication methods (Metody Komunikacji Międzyaplikacyjnej) — elective, self-designed course, 2005–2007

- Preparing and teaching ASP.NET course, 2006

- Teaching Erasmus exchange students (from Italy, Portugal, and Spain) in English.