Stepan Yakovenko

Senior C++/Web/ML software developer



Date of birth: 30 Nov 1980
Languages: English (fluent), Russian (native)
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SUMMARY

I am doing custom software development since 1998, working fulltime since 2004 and remotely since 2011 with customers from EU and USA. I am searching for 100% remote position on technically challenging projects.

Primarely interested in computer vision, recommender systems, machine learning, data science, numerical calculations. Besides experience in AI-related fields, I have more than 10 years of web development experience. My stackoverflow page has over one million viewers impact. I am also teaching Java and web development since 2006 both online and offline.

PRACTICAL EXPERIENCE

Data science: python, scikit-learn, numpy, Wolfram Mathematica, R, GSL, tensorflow, pytorch, keras, TensorRT
C++: C++11, STL, WIN32, COM, WinAPI, OpenGL, cmake, gcc, mingw, gdb, x86 assembler, ODBC, cppunit, FFTW, OpenCV, QT, rust, C#, dlib, civetweb
Java: J2SE, JNI, JDBC, hibernate, tomcat, jboss, JSP, Java Servlets, JUnit, mime4j, velocity templates, Selenium, JAXB, XStream, Digester, UJAC, ant, GWT, maven, morphia, spring, jackson, jetty
IDE: IDEA, Eclipse, JDeveloper, NetBeans, Yourkit, MSVC
DB: MySQL, Oracle, DB2, postgresql, mongodb, clickhouse, ethereum
Web: ASP.NET, PHP, Flash, HTML, HTML5 canvas, CSS, XUL, XSLT, xpath, AJAX, javascript, Angularjs, CSS, jQuery, NodeJS, node-imap, grunt, pdfkit, LESS, chrome extensions, EJS, WebRTC
Unix: Debian, CentOS, Linux Mint, cygwin, nginx, httpd
Other: git, svn, cvs, StarTeam, Perforce

EMPLOYMENT HISTORY

INEX TECHNOLOGIES, USA — computer vision python/C++/web senior developer

2019 - 2021

Created production-ready software for NVIDIA Jetson-based ALPR detection hardware from scratch. I have deployed pretrained license plate reading neural networks (YOLO and GRU-based CNN) on new hardware with TensorRT (https://www.inextechnologies.com/wp-content/uploads/2019/11/IZODPU-G.pdf). Implemented inference core in C++11 (video processing as multithreaded OpenCV/ffmpeg application), user web GUI and high-level logic code in nodejs. Also invented optimised CPU-based image downsampler, which significantly overperformed cv::resize in INTER_AREA mode in terms of performance with comparable image quality. Feature-engineered license plate aligner for license plate reader, which performed robustly on skewed and misaligned license plates and allowed to raise recognition precision from ~80% to ~90% on such plates. Took all major technical decisions, managed work of web developer and tester, collaborated with data scientists and technical writer.

For another project, which focuses on detecting, measuring and counting axles on vehicles, implemented an algorithm for camera calibration from a single image. Together with object tracking and various 2D geometric approximations, this allowed to measure distance between axles with precision less then one decimeter from a camera, mounted on a toll plaza.

CSCenter, Yandex, Novosibirsk — teaching students Java and computer vision.
2019 - now

Pro Vision Lab, Ukraine, Kiev — computer vision C++ senior developer
2018 - 2020

- Prototyped project for thread detection in sewing machine, proposed original algorithm, which worked stably where traditional approaches like Canny detector/ Hough line transform failed. Prototype was created with MSVC, OpenCV, cmake, QT.
- Silhouette tracking algorithm for US startup counting people from CCTV media stream and collecting furniture usage statistics. Used SUBSENSE/Zvikovich algorithm for background subtraction, QT for user interface, OpenCV for video frame extraction and morphological operations.
- Built prototype for crack detection software. Managed creation of labeled VOC2007 dataset with two other people, double-checked their labeling. Trained crack detection neural networks (UNET and FRCNN), deployed code to linux production server, implemented simple API for crack detection with nodejs.
- Optimising OpenCV CSRT video tracker code to employ powerful 64 CPU hardware for airplane landing tracking software.

Gazprom-media, Moscow — data engineer, machine learning developer
2018 - 2019

Built highload recommender service for online news site with ~300K users per day on average. Used java, mongodb, clickhouse, mapdb, apache hadoop, apache mahout, mlpack. Tried various recommender algorithms and libraries on real users with AB-tests. Used apache sparkml iALS in final version. Solved challenging problem of HTTP responce latency (<20ms per request on average in production under 20rps on peak). Managed to achieve ~20% increase of clicks on recommended compared to top material, ~100% increase compared to baseline random recommendations (measured in A/B tests).

ILFIRON, Slovakia, Bratislava — *Software Architect*

2014 - PRESENT

Javascript kernel programming for Collab-office, online DOCX collaborative editor based on HTML5 canvas. Chosen technology, created prototype, invented approach for collaborative XML editing, reverse-engineered DOCX format, implemented layouter, solved cross-browser portability issues, implemented unit tests.

Created WebRTC-based web service www.visitele.com with nodejs, which allows customers to embed video chat into their websites and talk directly to customers. Implemented server side in nodejs, client side with AngularJs and pure javascript. Collected requirements from customer, prototyped different approaches, performed highload optimisation for production.

Scoobe3D, Germany, Munich — computer vision C++ researcher
2017 - 2018

Prototyped and implemented various alorithms for 3D reconstruction for 3D scanner startup company. Developed, implemented and tested various algorithms for TOF camera, multiview/stereo point matching and cloud point averaging. Implemented effective subpixel camera position with ARUCO markers. Supervised junior with porting C++ code from Windows to Linux. Participated in assesment of existing MVG 3D reconstruction software and creating 3D datasets.

Logic Lab, Moscow — Java, Javascript *Developer, Blockchain developer*

2016 - 2017

As a team lead of two developers created Proof of Concept of Android bytecode obfuscator utility for www.arxan.com. Prototype was able to obfuscate class/methods/fields names, insert opaque predicates, search for bytecode sequences, inline and split (inverse of inline) methods. Did huge research on Dalvik bytecode verification algorithm and implemented static bytecode analysis code to derive register types in order to be able to produce correct bytecode.

In the same team created prototype of blockchain ethereum-based system for encrypted storing of personal data for healthcare industry. Nodes in the network were of two types: trusted central nodes and user nodes. System contained sofisticated rules for sharing personal file access between nodes, while files themselves were stored at the nodes, no on the blockchain. Prototype was succesfully presented and deployed for the custormer.

TripTop Technologies, Israel — Java/Javascript *Developer*

2013 - 2014

Participated in development of online travel booking services (flights, charters, hotels, transfers, etc) for, www.yestravel.co.il. GWT/angularjs web component is integrated into affiliates' websites to allow direct booking by websites' visitors. Tomcat was used as server, it accumulates travel products from travel service providers. Service consisted of four main GWT modules: service search interface, booking iterface, payment wizard and backend interface for affiliate registration and configuration. Server side was not only serving these interfaces, but communicating with travel services (GDS) like Amadeus or Sabre.

I've created personal cabinet, that allows to store user information, download documents. Ported payment wizard to angularjs from jsp pages, improved integration with Pelecard online payment system. I've created client part of online transfer booking system, also participated in improvinglegacy GWT code.

Accusoft Pegasus, USA — Java/C++ *Developer*

2010 - 2013

Worked with team of ~ ten developers (Indian, 5 Americans, and 4 Russians). Created product ImageGear Java, released beta version. Ported image compression algorithms (GIF, JPEG, PNG, TIFF and many others) from C#/C to Java, sometimes using JNI. Participated in development of Prizm ContentConnect in international team of 10 people. Fixed bugs in document conversion kernel, also fixed or ported web interfaces between platforms (PHP, C#. VB.NET, JSP). Supporting legacy FLASH viewer for SWF documents. Also proposed and promoted sophisticated solution of critical document rendering fidelity issues that saved product place in the market. This solution works in yahoo mailboxes.

Development On The Edge, Russia — Java/Javascript/C++ *Developer*

2008 - 2010

Worked on the following projects:

- Territorial Information System of Novosibirsk Oblast (a federal subject of Russia). System stores data about people living in the region, their attributes (documents, addresses, marital status, social categories and so on) and calculates amounts of social welfare that these people receive every month. Developed javascript-based object web platform for displaying and editing detailed citizen's personal information. Created interface for editing KLADR (Russian State Address Database) that was also employed in another project (Federal Veteran Database) that is used in all regions of Russia. All the payment transactions are recorded using double-entry bookkeeping system that was implemented by me. System is implemented as Java web application for Apache Tomcat, database is Oracle 11g.
- DatABEL, BigData package facilitating analysis of large (giga- to tera-bytes) matrices; matrix storage is

organized in a way that either columns or rows are quickly accessible; primarily aimed to support genome-wide association analyzes. The package is a C++ plugin for R (a language and environment for statistical computing and graphics). Plugin allows to process, load, save, transpose large data even if they don't fit into memory. It is implemented in GNU C++, being built for four operating systems (Windows, Sun OS, Mac OS, Linux) with some parts implemented in R. Created project almost from scratch, improved speed, implemented caches, file handle pool, compared speed with other similar projects.

- short-term project for computer tomography. Supported (fixing bugs, improving interface) of Java applet and C++ WIN32 executable.

BCS-IT, Russia — *C++ Developer*

2008

Developed extensions for Microsoft Remote Desktop with Microsoft Visual Studio. Created a prototype of the final system that was designed to speedup OpenGL 3D graphics that was transferred over RDP connection. OpenGL system DLL was replaced by version that sends OpenGL commands over RDP and executes them directly on the client screen instead of sending uncompressed images that slow down data exchange. Developed code-generation algorithm for serialization of OpenGL commands for final version.

Softmotions, Russia — *Java, Javascript Developer*

2007

Participated in development of university information system. This system stores and manages data that refers to all aspects of educational process: academic curriculums, students, exam results, faculty finances and so on. The system is deployed in Novosibirsk State University. Developed Hibernate and SQL queries, XUL pages, WEB applications, UJAC reports, maintained and created new javascript and java code.

DataDynamics, USA — *Win32 C++ Developer*

2006

COM developer at DataDynamics (www.datadynamics.com). At the beginning I was working on DynamiCube OLAP product. Shortly after, my responsibility was extended with three more projects (ActiveBar, SharpGrid and ActiveReports). My personal achievement in DataDynamics is creating of automated build system for ActiveReports and DynamiCube.

LEDAS, Russia — *C++ Developer*

2005 - 2006

C++ developer of LGS3D solver at LEDAS. LGS3D is a computational component used in heavyweight CAD systems. During my work I have implemented support for spheres, created quick test platform. I've also inspired massive code refactor, that allowed to redouble solver speed using delicate tuning.

EDUCATION

2003 - 2005 Novosibirsk State University, master's degree, Department of Physics, chair: physical informatics.
1998 - 2003 Novosibirsk State University, bachelor's degree, diploma with honours, Department of Physics, chair: quantum optics.
1998 - Specialized Educational Scientific Center for Physics, Mathematics, Chemistry and Biology Of Novosibirsk State University, High school graduate
2016 Courserra: Supervised machine learning
https://www.coursera.org/account/accomplishments/certificate/B6T583CPJH25

RECOMMENDATIONS FROM MY PAST EMPLOYERS

Lucas Hardbarger, USA — Lead Software Developer / Architect

My name is Lucas Hardbarger and I was once the Product Manager for various products at Data Dynamics. Data Dynamics is an international Software Company that specializes in developing tools for Software Developers to use in their own applications. I worked at Data Dynamics between October 2000 to September 2008. During my time as the Product Manager at Data Dynamics, I had the privilege of working with Stepan on many products.

Stepan was a C++ developer that joined the company and maintained many of the products that I managed; namely DynamiCube, ActiveBar, and ActiveReports. Stepan was directly responsible for adding features and fixing bugs of these products. A customer would report a bug to our support team. And it was my job to work with support, and development to see that the customer was happy. Stepan jumped right in and was fixing bugs in no time. I was very impressed with his extensive knowledge of ActiveX / COM technologies. He exhibited a very strong understanding of the C++ language and was able to quickly learn how our components worked in order to fix bugs and extend functionality. These were all very different products which required different abilities on each one. We were very pleased with Stepans ability to get up to speed so quickly. Below is a quick overview of just how different each product actually is and what was required from Stepan:

DynamiCube was (and still is) a component which enables multi-dimensional OLAP analysis to client machines. Its internal data engine is very complex and requires highly optimized code throughout. While Stepan did not write the initial implementation of this component, he was required to fully understand the internal data matrix of this in order to fix bugs and extend the features in a timely manner.

ActiveBar was another product that Stepan maintained. This particular component enables application developers to deliver a "Microsoft Office" style user interface to their end users. The ActiveBar component basically hosted the user's application inside of it to allow the windowing system to be manipulated by the control. Stepan was required to have a deep understanding of the GDI and GDI+ API's in order to maintain this code base. The component was very tightly tied to the graphical interface. Stepan jumped right in and was adding features and fixing bugs in no time. I was very surprised by how quickly Stepan was able to learn this particular component.

ActiveReports was Data Dynamics flagship product and is (still to this day) a top seller among the ActiveX component vendors. The component requires communication to various printer drivers. This component was quite different from the other components in that it had a Report Designer that was embedded directly into the Visual Basic IDE. Stepan was responsible for maintaining this codebase as well. This was our most active product, and had some of the most complex architecture under the covers. Stepan was required to understand it's event driven engine as well as extend the rich user designer.

Each of these controls showcased a completely separate set of functionality. Stepan was able to adapt to our standards and processes very quickly. I would highly recommend him to anybody that is looking for a highly motivated and professional software developer. I only know of his C++ knowledge. However, I'm confident that his extensive knowledge of C++ only proves that he is able to master any computer programming language with very little effort.

Harold Weber, USA — Senior Software Engineer, Symantec Corporation

I collaborated with Stepan Yakovenko daily for two years while we ported an imaging SDK of many thousands of lines of C# code to Java. He developed clever methods for debugging highly technical algorithms and found ingenious ways to automate some of the rote tasks. He also worked extensively with the Java Native Interface, creating many useful C++ classes and dlls and demonstrating adeptness with subtle thread interactions. We would never have been able to complete our goal in as timely a manner without his help. We subsequently developed components for web services for other imaging products. I found him to have a broad and deep knowledge of web technologies.

I relied upon Stepan throughout our association. He is very intelligent, conscientious, and hard working. He is creative, adaptable, and easy to get along with; and he worked independently.