

Curriculum Vitae

Personal data:



Born: November 15, 1948
in Russia

Social status: widower

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Languages: Russian,

English, Bulgarian;

read: German, French,

Polish

Education:

MS, 1972 Moscow University, Physics Department, Master thesis:

(summa cum laude) WKB-approximation for scattering amplitude on even
quasipotential

Scientific advisor: Prof. V. G. Kadyshevsky

Research specialty and fields of interest:

1998--now: Internet development.

1993--now: Computer chess, system programming, programming for Win32.

Employment:

1976--now: Institute for Nuclear Research and Nuclear Energy (INRNE), Sofia, Bulgaria, research fellow

1974--76: Research Institute for Nuclear Physics (NIIJAF), Dubna, Russia, research engineer

1972--74: Joint Institute for Nuclear Research (JINR), Dubna, Russia, junior scientist

Certificates, Contests, etc.:

Programmer's contests:

I have participated 5 times in most prestigious Bulgarian programmer's contest, organized every year by PC Magazine (Bulgaria); 4 times reached the final (7th -- "on-line") round, where took the third place this year as well as got the special prize from Microsoft for my good knowledge of Microsoft.NET technology. See [IX Programmer's Contest \(PC Magazine\(Bg\)\)](#). The problem to be solved on the final round was to write (in 4 hours) a program playing on the currency market USD/Bulgarian lev. The program was tested on 8 different lev/\$ fixing sequences of length 2000. The start capital was 1 000 000 lev in each test. The champ program ended with the sum \$28 000 000 over all tests, and my – with only \$15 000 000. But were I took the risk to compile a better version, which was not yet tested and debugged enough up to the last second of the contest, my program would be the champ with fantastic result: \$14 000 000 000 ! The details as well as the analyses of my algorithms can be seen at [solution_vladimir.molotkov.html](#). Unfortunately, in Bulgarian only.

Brainbench (former Tekmetrics) professional certificates:

Valid yet:

C score: **3.66**

JavaScript score: **3.4**

HTML 3.2 score: **3.12**

Go to [Brainbench](#) for details.

Vanished mysteriously (though were promised to stay till the end of 2004):

C++ score: **3.93**

OO Concepts score: **3.00**

Programmer/Analyst Aptitude score: **3.04**

Expired (in Oct. 2000):

Certified **Active Server Pages** Programmer (score: **3.42**)

Certified Master **JavaScript** Programmer (score: **4.08**)

Certified **HTML** Programmer (score: **3.08**)

Besides, approx. **15000** expert points earned for the last 3 month (in the field of JS and DHTML mainly) at www.experts-exchange.com

Computer-related skills:

Practical knowledge of algorithms:

Computer chess algorithms: MiniMax & NegaMax, Alpha-beta pruning, Quiescence search, etc;

Optimization: dynamic programming, gradient methods, linear programming;

Geometric algorithms: Voronoi diagrams and Delaunay triangulation, convex hulls;

Cryptanalytic algorithms, based on variations of LLL bases reduction algorithm in lattices;

ECC encoding/decoding algorithms;

Network Flows;

Graph algorithms;

Pattern recognition (approximate string matching);

Compression algorithms (LSZ based).

Programming languages:

C(with Win32 API); C++(with MFC and WTL); C#.NET; Visual Basic.NET, HTML/CSS; Java; JavaScript, VBScript, Transact SQL (with ASP.NET+ADO.NET); x86 Assembler; Pascal.

Libraries:

CGAL (Computational Geometry Algorithms Library); Leda; GAP 4 (Groups, Algorithms and Programming); NTL (Number Theory Library); GMP (GNU Multi-Precision Library); Zlib; Open GL.

Development tools:

Programs developed:

In the period between 1993 and now I have written more than **3M (70 000 lines)** of code in different programming languages. Until now programming is not my main preoccupation (but, rather, a kind of hobby), so most of the programs developed were written for my own pleasure. Except one case, when I was building a web site to earn some money. Below are listed some of the programs.

2007---Now: **SkyChatsXplorer**

The program extracts Skype chats from Skype databases and converts them to RTF format. It can extract in some cases even deleted chats. The program is not based on Skype API, so no knowledge of Skype passwords is needed for the correct functioning of the program. The first version was written in C#.Net, but was much too slow in visualizing big (several megabytes) RTF files obtained by converting big Skype histories, especially when part of chats are in exotic languages like Chinese or Thai. Besides, .Net executable can be easily reverse engineered. That why I have rewritten the second version of the program entirely in WTL. The program is supposed to be distributed commercially through the internet.

Source: 2.8M (most of which are computer generated code for Unicode tables), **EXE:** 2.4M

2006: **SkypeCallRecorder**

The program recording skype voice conversations. Uses Skype API and is written in C#. Originally was supposed to be distributed commercially. But there appeared a big number of applications with the same and better functionality (some of them are freeware). This made senseless the further development of this program.

2006: **RepairFileNames (v.1.1).**

There is a bug in Total Commander's ftp client. At certain conditions cyrillic file names of downloaded files become corrupted: instead of being written in cyrillic Unicode page (trailing byte of unicode characters==4) they are written in Unicode page with trailing byte==0 (i.e., West European) instead. This happens if File list font of Total Commander is used with cyrillic script AND Language for non-unicode programs in Regional and Language Settings-->Advanced is set to English. The bug is invisible in Total commander until one changes Language for non-unicode programs to, say, Russian. Then one sees abracadabra instead of real cyrillic names. The program RepairFileNames v.1.1 repairs corrupted cyrillic file names. It can as well repair corrupted greek, hebrew and arabic file names.

2005: Coindrep (v.1.3 beta).

This program calculates differential operators of coinduced representations of Lie superalgebras. This scientific software automates routine calculations of these operators, necessary in many fields of mathematics and physics. Manual calculations for not very big algebras (up to 30 generators) may take a week or two, whereas the program makes the same calculations in several milliseconds. For bigger algebras the calculations with this program may take a day or two, whereas manual calculations are practically impossible.

2004: the freeware program rtf2latex is modified.

This modification permits one more or less satisfactorily translate equations inside .doc or .rtf files into LaTeX. Original rtf2latex fails to convert equations of format Equation.3 implanted into .doc files. On the other hand, commercial program MathType is able to convert those equations to TeX or LaTeX, but fails to do this for the whole .doc or .rtf file. Now modified rtf2latex permits one to get satisfactory results, if applied after MathType. In the future I hope to add to rtf2latex the functionality of MathType as well. Then there will be no need to use MathType at all.

2004: Seq2Mid:

program converting Alcatel's .SEQ music files to MIDI format; it can as well strip .SEQ files from inside other files (like handheld's firmware)

Source: 800 lines (23K); **EXE:** 60K

2001: Q2Hull: program for calculating 2-dimensional convex hulls

The algorithm used in this program is about 2 times quicker, than the 2-dimensional part of the algorithm used in well known QuickHull of C.B.Barber, D.P.Dobkin and H.Huhdanpaa.

Source: 1400 lines (37K); **EXE:** 200K

Oct 2000: creating API for manipulating with Time Zones in Java Script

Demos and source can be seen at theo.inrne.bas.bg/~vmolot/JS/TimeZones/TZones.htm and theo.inrne.bas.bg/~vmolot/JS/TimeZones/WorldClock.htm.

Remark. On 06/22/03 I accidentally discovered that the second of the above pages and, sometimes, the first one as well are not drawn well in IE v.6 SP1 shipped with Windows XP. As if the corresponding Java Script is completely ignored. If one loads the same pages as local file (via file://...) everything is OK. I do not know, whether this is a bug in IE6 or some hardly discoverable security parameters inside IE6 prevent this Java Script from running.

Source: API – 28K (900 lines); JS arrays with Time Zones DB (extracted from Java SDK and Win98 registry) – 35K (1000 lines).

Jun--Dec 1999, May--Jun 2000: Prototype of E-auction web site for car dealers

It was developed for Arev Developments Inc, Montreal, (Quebec) Canada. In 2001, I got a 6-month work permit to deploy the web site and integrate it with financial transactions tier. Unfortunately, I was unable to break through the "iron curtain" created by the Canadian Embassy in Romania, which has its own vision of the corresponding bureaucratic procedures, different from that of the ministry of labor of Quebec. So the site (Auto-e-change.com) was deployed without my participation, and looks somewhat degraded compared with original prototype.

Source: 450K (15000 lines) in VBScript (server: ASP+ADO), JavaScript and Java (client); over 70 SQL queries.

Nov 1996, Mart--April 1999 Language support for MEW:

- 1) Language support for TeX (beta);
- 2) Modifications of LANGUAGE.S necessary to guarantee adequate TeX support;
- 3) Some of the bugs in TEMPLATE.S were fixed as well as 3 new template meta commands were added;
- 4) A number of improvements and patches added to CIndent() and COpenBrace() macros. In particular, 4 new C language indent options were added.

Source (commented): CMAC: 4900 lines, 140K;

1999 Marquee: Applet v.0.4 and JavaScript bean v.0.9b.

A version of Marquee.ocx (running banners) written both as Java applet (Marquee.class) and JavaScript (Marquee.js).

One can encounter a number of Java versions of Marquee on the Web, but writing the same code in JavaScript is very tricky. And, due to some bugs either in my code or in Netscape 4.5 (it fails to run in earlier versions), running banner destroys while resizing browser window or changing fonts. That is why I started the applet version here, for demonstration: though it is now yet less functional than JavaScript version (I started to write the code only a week ago, 06/22/03), it is much more stable.

OS: All platforms.

Source: Java: 440 lines, 14.8K; JavaScript: 280 lines, 9K

Bytecode: (Marquee.class & movingString.class) 7K.

1998 Polygons

This is a program for drawing vector graphics.

An original algorithm is developed for quick window redraw after local operations like selection and drag. If the number of objects is big (100 000 -- 500 000), screen refresh speeds up 100-300 times (depending on RAM available) compared to Microsoft's DRAWCLI sample program algorithm.

OS: Win32, written with MFC.

Source: 3900 lines (100K) added to Microsoft's template code; **EXE:** 130K

1997 MasterMind player v.1.42

Very strong search algorithm playing mastermind is realized, with 4 depth levels and the self-training ability; many tricks are applied to speed up the best guess search (group theory and Young diagrams are used, in particular, to reduce the number of potential candidates to be considered).

Results for 4 pegs and 6 non-repeating colors: at depth 1 all 1296 possible games are running (in statistics mode, on PC with Cx DX5 100Mh) in 13 sec, at depth 2 -- in about 1 min 44 sec, at depth 4 -- in about 8 min if one runs for the first time and 11 sec afterwards (First 4 moves of each game are being cached to a file).

The search algorithm is almost optimal: the difference from optimal game tree (5625 nodes - K.Koyama & T.Lai) is 6 nodes only for search at depth 4.

OS: Win32 console; portable to UNIX

Source: 3100 lines in ANSI C++, 83K; **Exe:** 92K

1997-1998 SpyTrap v.b.1-

Utility inspired by KeyTrap (thanks to dcypher!) and serving to detect and neutralize TSR's like KEYTRAP and KEYCOPY, who are hooking INT9 and logging the whole keyboard input into a file (VERY effective password stealing utilities on multi-user PC's under DOS in NETWARE environment!);

OS: MS DOS

Source: 800 lines in x86 Assembler (19K); **Com:** 2K

1997 KeyTrap v.4

Stealth and disguising abilities are added to dcypher's v.2 with the purpose of testing the (virulence of) spy-detecting program SPYTRAP (see above).

OS: MS DOS

Source: 900 lines in x86 Assembler (25K) added to original 300 lines of dcypher's v.2 code; **Com:** 2.5K

1996 RS-codec

A program demonstrating Reed-Solomon ECC encoding/decoding procedure applied for files. Encoding/decoding routines used are, essentially, due to S.Rockliff, with changes.

OS: MS DOS

Source: 800 lines in C, 25K; **Exe:** 15K

1996 BootSave v.b.1

A counterpart to Norton's RESCUE utility; in contrast to RESCUE discovers, if present, HDD managers (used on older generation of PC with HDD bigger than 512M) and saves in this case the whole area between MBR and boot record: otherwise, in case of virus damage one often needs to reformat the whole DOS partition of HDD because the restoration of MBR & BR only does not make HDD bootable.

OS: MS DOS

Source: 2300 lines in C++, 70K; **Exe:** 37K

1995 PrePrint v.1

Formats files for printing with DOS PRINT command, inserting PCL commands into them; may split files in 2 for printing even and odd pages separately (used with HP desk jet printers under DOS);

OS: MS DOS

Source: 800 lines in C, 20K; **Exe:** 15K

1993-94 (96 ported to Win95/NT) Gnu Chess for Windows v.3.21+:

Enhancing UI, adding new options and optimizing code: now 16 bit version is about 50% faster than that of D.Baker (if both compiled with Microsoft C 8.0); 32 bit version adds additionally about 18% in speed.

OS: Windows 3.XX, Windows 95/98/NT

Source: 3500 lines in C, 100K added to GNU & Daryl Baker's v.3.21; **Exe:** 110K

1993-95 Cpretex v.2

TeX preprocessor for Cyrillic (used together with my package CyrLaTeX for LaTeX Cyrillic).

OS: MS DOS

Source: 1500 lines in C(ver.1 -in Pascal), 43K; **Exe:** 20K

Preferences and skills:

Speed optimization, UI enhancements, relatively non-standard code; very good skills in math; ability to quickly learn and self-train.

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