

**Profile:** I am a seasoned IT professional and author of computer books, with four decades of experience. I worked in Europe, North America and the Middle East, in the areas of scientific and business programming. I also work as a physicist, recently under contract with the Jet Propulsion Laboratory. I popularize physics through [quora.com](https://www.quora.com/). Many of my contributions were featured by *Apple News*, *Forbes* and *The Huffington Post*. My technical expertise and communication skills are demonstrated by a variety of Windows and UNIX applications, planning documents and studies, scientific papers, and several books that bear my name. Highlights from my professional career include the following:

- 2023– : Developed a custom UI for the OpenAI and Anthropic LLM APIs optimized for scientific use.
- 2019– : Developed the initial version of a new file and content-sharing commercial Web service.
- 2016– : Participated in a NASA JPL-led effort to study the solar gravitational lens. Developed FFT-based image convolution code to simulate SGL image formation, and an orbital model for “Sundiver” solar sailing spacecraft.
- 2012– : Developed Microsoft SharePoint server-side (C#) and client-side (JavaScript using SharePoint) components for automatic translation for IceFire Studios. Continue to provide occasional assistance with developing new technologies.
- 2004– : Repaired and continue to maintain the tensor algebra packages of Maxima, the world’s premier open-source computer algebra system, written in LISP and running on many operating systems. Manage Maxima releases.
- 2000– : Established and continue to maintain [rskey.org](https://rskey.org/), a virtual museum of programmable calculators.
- 1999– : Ported the world’s first multi-user computer game (M.U.D., or Multi-User Dungeon) from BCPL and a 36-bit computer platform to modern 32-bit architectures. Continue to host this historical game at [british-legends.com](https://british-legends.com/).
- 1993– : For Bell Canada, developed software (C/UNIX), still in use as of 2023, to remotely test telephone switching systems.
- 2020–2022: Participated in the NIAC Phase III Study on the Solar Gravitational Lens, working for NASA JPL.
- 2018–2019: Developed a 4GLTE planning tool for private LTE mobile phone networks, working with a team at Carleton University.
- 2013–2018: Developed a Web-based tool (PHP, MySQL, JavaScript) for evaluating prospective legal cases, for a European client.
- 2013–2018: Assisted Best Theratronics, a medical device manufacturer in the design and development of firmware (C#, MS-SQL; QNX) for a new radiological device, and with the preliminary design of a new software architecture.
- 2016–2017: Developed IT security training course material (to be published in book form) for end users and home users.
- 1998–2017: Developed and maintained Industry Canada’s Integrated Spectrum Observation Centre for Windows: in approximately 120,000 lines of C++ code and accompanied by a 300+ page training and reference manual, this client-server suite provides remote access to radio frequency instruments such as spectrum analyzers and test receivers.
- 2013–2015: Helped with the design, budgeting, organization and staffing plan and procurement for the IT architecture of a new metropolitan traffic management center in the United Arab Emirates.
- 2009–2013: Developed GPGPU N-body simulation code and Bose-Einstein condensate simulation code.
- 2005–2012: As a key member of a NASA JPL led team, participated in the resolution of the Pioneer Anomaly. Developed precision orbit determination code and a ray tracing estimator of thermal emissions (C++ and FORTRAN, Windows and Linux). Wrote code to interpret spacecraft telemetry records stored in obsolete binary formats. Co-authored several papers. This work was featured on the cover of *Physical Review Letters* (June 15, 2012) and *IEEE Spectrum* (December 2012).
- 1995–2011: Developed NORTEC H.E.L.P., a product database browser and engineering estimator for use by agents of NORTEC, a manufacturer of building humidification equipment; developed prototype of new Web-based application version.
- 2004–2010: Implemented a Web application (Oracle, Java, HTML and JavaScript) for NORTEL, tracking real estate development projects. Hosted, maintained and rewrote a similar application (MySQL, PHP, HTML, and JavaScript) for Canada Post.
- 2001–2009: Developed several Windows Mobile programs, some of which were licensed to AMD.
- 2005–2007: As a Director of our Condominium Corporation, oversaw the successful completion of the modernization of our condominium complex, meeting all project objectives while staying within the planned approx.. \$1 million budget.
- 2003: Wrote an open-source C-language Linux driver for the Energizer line of low-cost uninterruptible power supplies.
- 1994–1999: Wrote several books published by SAMS Publishing in the United States, including *Visual C++ 5 Unleashed*, and *Linux: A Network Solution for your Office*.
- 1997: At National Defence, helped define a records and document management system and prepare the project for tender.
- 1994–1996: Developed bar code printing software (C/C++, macros in Microsoft Word, WordPerfect, and AMI Pro/Lotus Word Pro) for Canada Post. Developed experimental code to analyze the topology of letter carrier routes and coloring route maps.
- 1994–1995: Developed a Microstation CAD application to model the sight line of airport control towers, for Public Works Canada.
- 1987–1994: Coauthored the Canadian Patent Office’s \$65 million Automation Master Plan. Assisted the consulting company in the development of business opportunities with the patent offices of China, Hungary, Mexico, and Taiwan.
- 1989: Developed several extensions to the Microstation CAD software suite while working at Canada Post Corporation.
- 1988–1989: Coauthored a study for the redevelopment of the Financial Institutions File of the Canadian Payments Association.
- 1986–1987: At the Vienna University Hospital, ported a statistical analysis package from TRS-80 BASIC to SPSS/PC.
- 1986: Wrote my second book in Hungarian, a professional reference for programmers of the Commodore-16 home computer.
- 1982–1986: Helped develop several early computer games, including the first aircraft simulation game for the Commodore-64.
- 1984–1985: Developed statistical analysis software (Commodore-64 BASIC) used in agricultural research at Bábolna State Farms.
- 1980–1982: Working for Hungary’s civil aviation authority, developed aircraft simulation code (FORTRAN, Simula-67).
- 1979–1980: Wrote the first Hungarian language book on *Rubik’s Cube*.

## Platforms, Development Tools and Environments:

- Windows, using Visual Studio (all versions); C/C++, C#, Visual Basic, .NET, MS-SQL Server, PowerShell, Office
- Apache server, HTML/CSS with PHP and MySQL/MariaDB, client-side JavaScript, jQuery, AJAX, Dojo
- Android using Eclipse and Visual Studio
- Linux using C/C++ and the GNU compiler suite, bash, csh, perl, X
- Scientific programming: Excel, Maple, Mathematica, Matlab/Octave, Maxima, Minpack, Python, R, SPICE/CSPICE
- GPGPU programming using AMD Stream SDK, CUDA, OpenCL
- Hands-on experience with the OpenAI and Anthropic LLM APIs
- Enterprise platforms: Microsoft Exchange Server, Microsoft SharePoint, Oracle, Oracle AS, sendmail
- Machine-language development and debugging including Intel, Motorola and legacy 8/16-bit architectures
- Embedded systems development (Windows CE including Platform Builder, Cyan eCOG, Microchip with MPLAB, PIC)
- Networking (TCP/IP, sockets, network protocols, winsock) and remote control (GPIB/NI-488, RS-232)
- Geographic information systems, including ESRI ArcGIS, interfacing with GPS
- CAD including development of extensions for AutoCAD and Microstation
- Scientific typesetting via TeX/LaTeX
- Collaboration and project management: git, Microsoft Project, subversion
- Cloud platforms setup and management, cloud service APIs: AWS, Azure, GoDaddy, Google

## Legacy Systems:

- Languages: ADA, ALGOL, BCPL, COBOL, FORTRAN, LISP, Pascal, PL-1, Simula-67, lex/yacc
- Platforms: CDC-3300, DECSys-10, IBM S/360, PDP-11, 8/16-bit microprocessors and microcontrollers
- Software: dBase, FoxPro, QNX (older versions), SPSS

## Books:

- *Linux: A Network Solution for your Office* (SAMS Publishing, 1999)
- *Visual C++ 5 Unleashed* (SAMS Publishing, 1998)
- *Visual C++ 4 Unleashed* (SAMS Publishing, 1996)
- *Windows NT Workstation 4 Unleashed* (SAMS Publishing 1996)
- *Windows 95 Programming Unleashed* (SAMS Publishing, 1995)
- *The Commodore 16 Internal Architecture* (Novotrade Budapest, 1986)
- *The Magic Cube* (TIT Budapest, 1980)

## Select

## Publications:

- Slava G. Turyshev et al., “Science opportunities with solar sailing smallsats” (arXiv:2303.14917 [astro-ph.EP])
- Henry Helvajian et al., “A mission architecture to reach and operate at the focal region of the solar gravitational lens”, JSR (2023)
- **Viktor T. Toth**, “Gravitoelectromagnetism and stellar orbits in galaxies”, IJMPD 13, 2150102 (2021)
- Hussain Al-Harthei, **Viktor T. Toth**, et al., “Efficient real-time allocation of patrol cars in traffic management”, Proceedings of the 2nd World Congress on Civil, Structural, and Environmental Engineering (CSEE'17), ICTE-105
- Jun Luo et al., “TianQin: a space-borne gravitational wave detector”, Class. Quant. Grav. 33 (2016) 035010
- Eniko J. M. Madarassy, **Viktor T. Toth**, “Evolution and dynamical properties of Bose-Einstein condensate dark matter stars”, Phys. Rev. D 91, 044041 (2015)
- Slava G. Turyshev, Mikhail V. Sazhin, **Viktor T. Toth**, “General relativistic laser interferometric observables of the GRACE-Follow-On mission”, Phys. Rev. D 89, 105029 (2014)
- **Viktor T. Toth**, “Humidification requirements in economizer-type HVAC systems”, ASHRAE Transactions 119(1) (2013)
- **Viktor T. Toth**, Slava G. Turyshev, “Finding the Source of the Pioneer Anomaly”, IEEE Spectrum, December 2012 (cover story)
- Slava G. Turyshev, **Viktor T. Toth**, et al., “Support for the thermal origin of the Pioneer anomaly”, Phys. Rev. Lett. 108, 241101 (2012); (featured on the cover, June 15, 2012)
- Slava G. Turyshev, **Viktor T. Toth**, et al., “Support for temporally varying behavior of the Pioneer anomaly from the extended Pioneer 10 and 11 Doppler data sets”, Phys. Rev. Lett. 107, 081103 (2011)
- Slava G. Turyshev, **Viktor T. Toth**, “The Pioneer Anomaly”, Living Rev. Relativity 13 (2010), 4
- J. W. Moffat, **V. T. Toth**, “Testing modified gravity with globular cluster velocity dispersions”, Astrophys. J. **680** 1158 (2008).
- **Viktor T. Toth**, “Tensor manipulation in GPL Maxima”, (arXiv:cs.SC/0503073)

## Education:

Budapest Technical University (Electronics Engineering)

## Languages:

English, Hungarian, some knowledge of French, German, and Russian

## Personal:

Born in 1963. Married (no children). Dual (Canadian and Hungarian) citizen, with residence in Ottawa.