

Avraham “Abe” Bernstein | CV

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Last Update: 2025-02-25



Secure¹ photo of the author from 2025

Introduction

1. I have more than 40 years experience in state-of-the-art software development especially inventing new algorithms.
2. I have many inventions and some **recent patents** in a wide variety of application domains, e.g.:
 - digital automotive industry
 - Internet TV
 - cybersecurity and anti-reverse engineering
 - bioinformatics
 - accessibility
 - factory automation
 - VLSI chip design
 - etc.
3. In order to jump start my learning process I prefer to find a domain expert to mentor me, and I am also a good mentor myself.
4. I am an expert generalist and an autodidact polymath². I easily learn and become an expert in new fields.
5. I am a "hands-on" master software engineer. I enjoy programming. I design prototypes and minimum viable products for *CTO* groups.
6. I know many computer languages which I am able to learn easily due to my compiler background; and my compiler background allows me to design domain specific languages (DSL) and to engage in automated

code refactoring.

7. I don't market myself as a programmer any more, but my "go to" *programming* languages in which I am quite proficient are the following:
 - *C*
 - *Python* and *BeautifulSoup*
 - *Jinaj2*, the "gold standard" macro and template preprocessor
 - *Pyexpander*, which is simpler than *Jinja2* and just as useful except where inheritance is needed, *but* unfortunately it is *polluted* by a GPLv3 license
 - bash, including Posix CLI commands
8. My "go to" *data* languages are *HTML*, *Markdown*, *pandoc*, *srcML*, *XML*, *YAML*, and *Excel*.
9. I thrive on undertaking new challenging projects. I am quite comfortable engaging in and leading *flexible* "brain storming" sessions.
10. I provide considerable value added to my clients.

Work Experience

2022-25: Aurora Labs Tel Aviv IL

Details: Automotive Software Updates: researcher in CTO office

2021: Morphisec Beer Sheva IL

Details: Server Cybersecurity: reverse engineering object code

2021: consultant to Qedit Tel Aviv IL

Details: Banking Cybersecurity Using WASM: software consultant

2018-20: Argus Cyber Security Tel Aviv IL (renamed PlaxidityX IL, subsidiary of Elektrobit/Continental DE)

Details: Automotive Software Updates: software research

2014-17: Viaccess-Orca Ra'anana IL (subsidiary of Orange FR)

Details: Internet TV Cybersecurity: S/W security manager

2013-14: Discretix Netanya IL (renamed Sansa Security, acquired by ARM UK)

The company sold their Internet TV Cybersecurity business unit to Viaccess-Orca (2014) above.

2012: Telequest (defunct) Jerusalem IL

Details: Vehicle Navigation Algorithms: VP R&D

2011: consultant to Synteza Bioscience Jerusalem IL

Details: Novel Bioinformatics PCR Algorithms: software consultant

2005-10: *NDS* Jerusalem IL (eventually acquired by *Synamedia* UK)

Details: Internet TV Cybersecurity: software researcher

2004: *Vyyo* (defunct) Jerusalem IL

Details: Broadband Wireless Cable Networking Testing Laboratory: architect

2002-03: *Virtouch* (defunct) Jerusalem IL

Details: Blind Accessibility: VP R&D

2002: *TMT* (defunct) Jerusalem IL

The company built local wireless cable networking equipment. I did similar tasks for *Vyyo*. See *Vyyo* (2004) above and *Vyyo* (2000) below.

2002: consultant to *Jolt* Jerusalem IL (acquired by *MRV Communications* IL, and eventually by *Adtran* US)

Details: Free Space Optics (FSO) Network Utilities: software consultant

2000-02: *Vyyo* (defunct) Jerusalem IL

Details: Broadband Wireless Cable Networking: manager offline S/W utilities

1999: contractor to *Phasecom* Jerusalem IL (acquired by *Vyyo* above)

See the tasks that I did for the successor company *Vyyo* (above).

1998: consultant to *Fourfold* (defunct) Jerusalem IL

Details: VLSI FORTH-like Stack CPU Novel GCC Compiler Port: S/W architect

1996-97: CEO *Pitkha* (defunct) Jerusalem IL, contractor for *Optimet* Jerusalem IL, subsidiary of *Ophir Optronics* IL

Details: DSL for a conoscopic laser interferometry robot: S/W architect

1996: CEO *Pitkha* (defunct) Jerusalem IL, contractor for *Elop/Elbit* Rehovot IL

Details: DSL for a mil-spec automated testing laboratory for the *BlackHawk* helicopter: S/W architect

1992-95: CEO *Pitkha* (defunct) Jerusalem IL, contractor for *DSP Group* Ramat Gan IL

Details: DSL for the VLSI *PINE* CPU software tool chain: S/W architect

**1990-91: consultant to Digital Equipment Corp (DEC)
Herzliya IL (eventually acquired by Hewlett-Packard IL),
contractor for Iscar Metalworking**

Details: DSL for a shop floor product control system that conducted a
completely automated factory: S/W co-architect

**1988-89: consultant to *Cubital* (defunct) Herzliya IL,
subsidiary of *Scitex IL* (acquired by Hewlett-Packard IL)**

Details: Stereo lithography (i.e. 3D printing) device: intermediate
programmer

**1989: consultant to *Cubital* (defunct) Herzliya IL, subsidiary
of *Scitex IL* (acquired by Hewlett-Packard IL)**

Details: Public domain accessibility project for quadriplegics: S/W architect

1987: *Orisol* (defunct) Lod IL

Details: My first DSL for a real-time leather sewing robot: S/W architect

1985-86: John Bryce Jerusalem IL

1. Junior C programmer and technical support for the *Glyph* Hebrew-English word processor.
2. VAX/VMS system admin.

**1983-84: *Decision Systems Israel (DSI)* (defunct) Ramat Gan
IL, contractor for Elta/IAI Ashod IL**

1. Junior embedded programmer for the "Namer" data entry terminal implemented on an Intel 8080 in PL/M.
2. Junior embedded programmer for the "Lavi" fighter plane initially implemented on a Fairchild CPU in *Jovial*, and subsequently on an Intel 80286 CPU in C.

1982-83: Mitre Corporation McLean Virginia:

1. Junior economist and PL/1 programmer for geothermal energy extraction project management.
2. Junior APL programmer in their IBM VM/CMS computer center.

1980-81: *J. W. Wilson & Associates* Washington DC

1. Junior economist and programmer for electric utility capacity planning models.

1977: Ontario Energy Board Toronto Ontario

Details: Public interest intervenor-economist in the ECAP77 hearings on
marginal cost pricing for electricity

Unpatented Personal Inventions

Education

1. **1978-79:** York Univ Graduate School Toronto Ontario: **masters degree in economics with a minor in applied mathematics³**
2. **1976-77:** Univ Of Toronto Rotman Graduate School Of Management Toronto Ontario: **no degree, applied credits to York Univ (above)**
3. **1973-76:** Univ Of Toronto, Undergraduate School Of Arts & Sciences Toronto Ontario: **BA economics**
4. **1969-73:** Vincent Massey Secondary School Windsor Ontario: **"Honours" (grade 13) high school diploma**
 - I took my first course in computer science in *FORTRAN* on an IBM 1130 mini-computer with 16 KB RAM. My first serious program was a *perfect* game of *Qubic*, 3D tic-tac-toe, using 4 levels of boards each of which has 4x4 squares. Subsequently I became "addicted" to programming for life.

Personal

Footnotes

1. **Secure Photo:** This secure photo was built using GIMP blurring filters (e.g. Gaussian, clothify, and oilify) along with a prominent distorted visible email address watermark. This digital "camouflage" will defeat almost all face matching algorithms - in spite of the fact that my 3 year old grandson has no problem identifying me from this photo. It protects my privacy in two ways. (1) Harvesting it from the Internet, and adding it to a database of photos that will be digitally compared with CCTV surveillance photos will not work. (2) The photo has built-in two factor authentication (2FA). The prominent email address watermark prevents a web site from maliciously displaying my photo while attempting to associate it with any other person besides me. Similarly if a site were to maliciously display my photo without my permission in order to imply my association with them then it would be trivial for anyone who may be suspicious of their claim to challenge the site by asking me for a verification email. And it would be interesting to consider adding an Eurion currency watermark that would fool Photoshop software along with high quality printers and scanners into believing that the watermarked photo is a banknote in order to prevent it from being manipulated or printed. The general field of obscuring personal information is referred to as de-identification. There was an Israeli company, *D-ID* now defunct, that specialized in obscuring high quality images without using any blurring filters which could not be used in automated password verification scanners!☹
2. **Autodidact Polymath:** There is a common misconception that only geniuses like *Leonardo da Vinci* deserve the appellation autodidact polymath, and therefore by referring to myself as one then I am making

the bombastic claim to be a genius in the same category as Leonardo. There is an outstanding TED talk showing how children from Indian slums with the appropriate mentoring can become *autodidact polymaths*. And there was a similarly successful project done with children from Mexican slums. Many very intelligent people, especially as they get older, don't like moving outside of their intellectual comfort zone, whereas I revel in taking on intellectual challenges in new fields outside of my comfort zone. Note my "grand slams" in a wide range of application domains, where the only way to quickly achieve expertise was self-learning admittedly with the help of highly qualified mentors. I feel that I still maintain a high degree of child-like mental plasticity. Part of this skill I retain by regular interaction with my own young grandchildren, where my play with them is much more analytical than I used to exhibit with my own children.↵

3. **York Univ:** Exceptionally I passed my comprehensive examinations before I took any of the required economics courses! Therefore the school allowed me to take any accredited courses from any Canadian university. I had initially wanted to take a graduate degree in engineering from the Univ of Toronto but they refused to accept me as a *regular* student, but they allowed me to enroll as a *special* student. In fact most of my courses for the York degree were from the Univ of Toronto graduate school of engineering.↵