

RÉSUMÉ

Computer Scientist, System Programmer and Administrator

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Continuously seeking to take part in the challenge of developing complex computer systems at their core by applying a diverse combination of creative approaches and solid theoretical principles while reinforcing stability and conceptual integrity in a growing environment.

Curriculum Vitæ

In reverse chronological order by end time

2001 — present System Programmer at the *Institute of Computer Science* of the *Hebrew University of Jerusalem* (later renamed the *Selim and Rachel Benin School of Computer Science and Engineering*). Part of a small team (ranging over time between nine and sixteen people), in charge of over 1,500 users and 1,100 computers (including over 40 servers and 130 distributed *MOSIX* compute nodes) at the institute.

Over the time, duties and activities include:

- Introduced the *IMAP* remote mail access protocol as a solution for users requiring access to their mail using various software, both within and outside of the site's network. Installed the *Dovecot IMAP/POP3* server back in the early stages of its development, followed its development in a small-scale test usage within a complex pre-existing heterogeneous mail delivery and filtering system. Identified bugs and file-system locking incompatibilities, and assessed performance, up to the stage of deploying a modified version of the 1.0 pre-release for stable production use, and keeping it up to date since. Over hundred users access their mail using the *IMAP* service remotely, part of them in conjunction to direct access when working locally.
- Adapt the *Samba* server suite to provide *SMB/CIFS (Microsoft Networking)* services (file-system access, printing, and domain control) to all *Microsoft Windows* clients in the institute. Patching the *MSRPC*, *NetBIOS* broadcast, logging, and *PASSDB* subsystems of the code for custom behavior and transparent integration of new clients; writing custom authentication and directory access *Samba* modules, and updating the code according to changes in the upstream codebase. Ensure full-time availability and security of the services across different subnets. At the early stages, this included substantial low-level network protocol analysis and debugging. The service is being used by over a hundred of *Windows* clients.
- Write from scratch and maintain custom *Pluggable Authentication Modules (PAMs)* for the institute's homegrown authentication and access control system, effectively simplifying the authentication process of most services provided and reducing the need for many difficult to maintain patches. These *PAMs* are used universally for authentication on all *UNIX (Linux, FreeBSD, and Solaris)* hosts in the institute, as well as back-ends to a *RADIUS* server for communications equipment and dial-up access. Also written smaller special accounting and session modules for requirements of specific servers.
- Help maintain scripts for diskless network boot of the *FreeBSD* operating system since the initial site deployment of version 4.3. *FreeBSD* is installed on dozens of internal servers (mail, news,

database, printing, name service, authentication, files, web, backup, gateway, etc.), on workstations of system and academic staff, and on special-purpose “kiosk” terminals.

- Write and maintain a set of scripts to monitor the condition of different services and servers, summarize their load, alert the group of any problems or irregularities, and in case of failure redirect to backup servers, to minimize time of unavailability.
- Install and maintain a secure network access gateway, allowing controlled access to the system to users from outside the institute's network following additional (one-time-password) authentication checking. Modified the code of the *FWTK* suite to add *PAM* authentication support, for the forwarding of *Telnet*, *FTP*, *rlogin*, and *X11*. Modified the *OpenSSH* code to provide support for forwarding sessions after authentication to a configurable set of hosts.
- Analysis and reverse engineering of binary data formats and network protocols at various levels (from the network/packet layer to the application layer) to resolve and pinpoint problems or compatibility and performance issues with proprietary applications.
- Install and adapt small local and remote networks of computers for short-notice temporary requirements, such as seminars, short one-time classes, project presentations, and guest lab demonstrations.
- Provide technical support for students and staff, troubleshooting problems, and supporting special needs of users.
- Routine system administration and resolution of issues.

2004 — 2007 Student of Mathematics (*minor*) and Computer Science (*major*) at the Hebrew University of Jerusalem.

1999 — 2004 Studies for full matriculation at the Hebrew University High School (“*Leyada*”).

1999 — 2004 Voluntarily taken partial responsibility to aid in support, upgrades, and administration of computing and networking services for teachers and students at the Hebrew University High School (“*Leyada*”) during the study years there. Was awarded the school's *Zackheim award* for that contribution.

1991 — 1999 Elementary and junior-high schools in *Mevasseret Zion*, Israel.

Honors, awards, recognized achievements

2005 • Backup finalist with Team Israel for IOI⁵ 2005 in Nowy Sącz, Poland

2004 • 1st rank in **CodeGuru**⁵ †

- The *Zackheim award* for contribution to computing at the Hebrew University High School (“*Leyada*”)
- 10th rank in the **Israeli Olympiad of Informatics (IOI)**

⁵<http://www.ioinformatics.org/> – the *International Olympiad of Informatics*, founded by *UNESCO* and held annually with international sponsorship.

[†]<http://www.codeguru.co.il/> – the annual Israeli competition promoting excellence in computing in youth, sponsored by the *Interdisciplinary Center of Herzliya*, the *Weizmann Institute of Science*, *Aladdin*, and *IBM*.

Knowledge, skills, and experience

Professional

- Computer programming
 - Structured programming, from low-level to object-oriented and functional paradigms
 - Design, coding, verification, performance evaluation (benchmarking and profiling), analysis and debugging
 - Efficient algorithm design and implementation
 - Main platforms: *UNIX/POSIX, Windows NT/2000/XP, MIPS and Intel i386/i486/Pentium low-level, Java*
 - Main languages: *C, C++, Java, Perl, Scheme, Python, TCL, PostScript, UNIX shell & tools*
BASIC, Pascal: vague memory from younger ages
- Operating systems – administration and operation
 - *UNIX* – mainly *FreeBSD* (versions 4, 5, and 6) and *Linux*, others in the past (*SunOS, Sun Solaris, SGI IRIX, BSDi BSD/OS*)
 - *Microsoft Windows* (95/98, *NT 4.0 Workstation, 2000 Professional and Server, XP Professional*)
- Communication and networking
 - Core
 - ◇ Understanding of *TCP/IP* and related protocol(s) like *ICMP* and *UDP*; *DNS*, administering and troubleshooting *ISC BIND 8*; Working with and understanding trivial protocols like *TFTP, finger, telnet, BOOTP/DHCP*, and *Sun RPC*; Experience with multi-subnet routing
 - ◇ Lower level serial and parallel communications
 - ◇ *Cisco, Alcatel, and Nortel* routers and modems; *Cisco and Nortel Ethernet* switches
 - Electronic mail: *SMTP / IMAP4 / POP3*
 - ◇ Administering the *Exim* and *Sendmail* MTAs
 - ◇ *Dovecot IMAP / POP3* server – administration and programming internals
 - ◇ Mail processing and filtering; acquainted with details of the *MIME* standard.
 - *NetApp* filers and *Intransa* storage appliances
 - *CIFS / SMB*
 - ◇ *Samba* implementation – administration and programming internals

- ◇ Technical understanding at the protocol level
- Web: *HTTP, HTML*
 - ◇ Administering *Apache & NCSA httpd*, and the *Squid* caching proxy
 - ◇ Server side scripting with *CGI*
 - ◇ Web page design and content – (*X*)*HTML, JavaScript, CSS*
- Data Bases
 - Using *SQL* and *relational algebra* concepts. Programming experience using *PostgreSQL, Oracle*, and *Microsoft Access* as back-ends
 - Setting up and administering *PostgreSQL*
 - Programming and working with *Berkeley DB (libdb)* and the *Trivial Database (TDB)* libraries
- General
 - *TEX*: Installing and configuring *TeX*, the *kpathsea* library, and *MikTeX*, using *TEX* and *LaTeX* macros for typesetting
 - *X Windowing System (X11)* – administering and configuring *XFREE86, X.Org, XSGI display server*, and *Hummingbird Exceed*;
Basic programming with *Xlib, Xt intrinsics*, and *TK*. Debugging at the low-level *X11* protocol
 - *XML* syntax and semantics for data storage and interchange, programming with *DOM* interfaces; including *XSD* schemas and *XSLT* style-sheets

Natural languages

- **Hebrew:** *Native* (spoken, written, and technical)
- **English:** *Fluent* (spoken, written, and technical)
- **German:** *Medium* (spoken and written)
- **Russian:** *Beginner* (spoken and written)