

Michael D. Sofka
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Interests

Electronic document preparation, typography, semantic web; Programming language design and implementation; Interpreters and compilers, functional programming and type-safe scripting languages; Aspect-oriented programming, Literate programming and Agile development; Email security, spam and virus detection and remediation; Scientific visualization, information visualization, computer graphics and animation; Copyright and intellectual property law, technology and law; Network security and privacy;

Skills

Programming Languages: C, C++, Perl, R, Python, Objective C, Java, JavaScript, Lex, YACC/Bison, Antlr; PostgreSQL, AWK, PHP, Tck/Tk, Lua, sh/ksh/bash, csh,; ML, Common Lisp, Scheme, Prolog, Haskell, Pascal;

Development Frameworks: Apache, LAMP, Tomcat, JBOSS, AJAX, Perl CGI; OpenGL, Qt, Emacs, vi, Ant; RCS, CVS, SVN, Git;

Document Processing: La/T_EX, METAFONT, PostScript, PDF.

File Systems: AFS, NFS.

Protocols: TCP/IP, SMTP, IMAP, POP3, LDAP.

Operating systems: Linux (Fedora, RHE, Ubuntu), OS X, AIX, BSD, SunOS, Solaris, Windows NT.

Email: Sendmail, Postfix, MIMEDefang, SpamAssassin, ClamAV, CanIt, qpopper, ListProc, Sympa, RoundCube.

Research: Experimental design and statistical analysis, information visualization, Human-Computer Interaction. R, SAS, SPSS.

Problem solving: Strong troubleshooting, problem solving skills. Ability to learn and apply technical knowledge quickly.

Languages and Communication: Conversational Hungarian, strong communication, writing, and presentation skills.

Education and Professional

M.A. in Cognitive and Experimental Psychology, University of Illinois, Urbana, 1987.

B.S. in Psychology, The Pennsylvania State University, University Park, 1983.

Member IEEE Computer Society, ACM, SIGPlan, SIGGRAPH, USENIX, T_EX Users Group, MAA

Sample Projects

Email Log Analysis and Search: Using `syslog-ng` to parse email logs and store envelope information in PostgreSQL database. Programs to analyze logs, searching for patterns indicating credential phish. Automated spam activity detection. Web interface using Tomcat and Spring framework to allow Postmaster and Network security to check delivery status, resolve errors, and search for local Spambots.

List Server Upgrade: Migrate current ListProc server to Sympa. Migrate existing lists and archives. Integrate with RESPITE anti-spam service. Integrate with Simon (Oracle DB) generated lists.

Email Mobility: Expanding email services for hand-held and mobile devices. SMTP-AUTH, "Push IMAP", Mobile webmail, Device and client testing on Android, PalmOS, WindowsCE and SymbianOS and iPhone. User documentation.

Cyrus IMAP Cluster: Migration from single Cyrus IMAP server to a Cyrus Murder cluster. Account migration and load balancing programs. Quota allocation management program. Merging legacy qpopper POP3 with Cyrus IMAP system including documentation, data collection and analysis of existing POP3 accounts, IMAP client testing, and further Webmail enhancements to smooth the transition for POP3 users.

RESPITE Anti-Spam: Based on CanIt, the Rensselaer Enterprise Spam Interdiction TEchnology blocks over 1,000,000 spam messages per day. Managed testing program, transition plan, and interface enhancements with email and web team. Ran data analysis on anti-spam results using beta tester data. Performed post-transition data-analysis on spam results, and false-alarms. Programs synchronizing ListProc list-owner data with Respite account access (via PostgreSQL), enabling management of spam to lists. End result was an 90% reduction in spam to end-user accounts, with a 0.3% false-alarm rate. Per-user customization allows an even further reduction in FA rate.

Postmaster Email Manager: Perl program to categorize and manage postmaster mail using IMAP. This program executes a simple stack language searching for postmaster email for sender, recipient and originating MTA, and re-files email of interest for human analysis and action. This reduced the burden of email the human postmaster needed to check, allowing system errors to be more quickly identified.

Campus Webmail Upgrade: Optimizations and upgrade of campus Webmail written in Perl CGI with Embedded Perl. Interface design improvements including IMAP Server-Side search and sorting, IMAP ACL editor, hierarchical folder display, smart indexing. Integration of Webmail with RESPITE anti-spam system; Webmail and IMAP documentation. Modifications to manage the very large (over 50,000 messages) mailboxes.

Integrated Messaging Committee: Co-lead on DotCIO Integrated Messaging Committee to propose upgrade path for Cisco Voicemail and Integrated messaging. Wrote committee white-paper proposing full upgrade to campus Exchange system, merger of Voicemail Exchange system with campus system, and full rollout of Blackberry Enterprise Service for mobile email access. Continuing work with ad hoc mobile and VoIP telecommunications group.

Webmail to IMAP Conversion: Conversion programs to migrate stored email from old, proprietary webmail system to Cyrus IMAP; Initial test data using Cyrus migration tools indicated email transfer would take from 3 to 7 days. This was unacceptable length of time for a Webmail outage. I wrote a new program in Perl which used multiple transfer streams, and differential transfer (transferring only email changes) to bring conversion time down to under 1 hour. This program also set all IMAP email attributes to correctly match attributes in original proprietary system.

Distributed SMTP Email Architecture:* Lead team developing RPI's distributed SMTP server architecture, moving RPI from a single email server for SMTP and POP3 to a cluster of SMTP servers behind Cisco Redirectors. This provided provided email delivery redundancy, and provided the capacity necessary to scan all incoming email for viruses and spam. Later integration with CanIt allowed per-user configurable anti-spam settings.

Webmail: Installed RPI's first Webmail server. The server, based on EMUMail Perl CGI source, required extensive modifications to aid navigation and integrate with RPI's qpopper server. Negotiated EMUMail source code license. Wrote L^AT_EX macros to print hyperlinked PDF of EMUMail source code to aid in agile project development.

Impose: Design and implementation of **Impose** for printing fully imposed pages as four-up and eight-up plates. **Impose** replaced the previous imposition programs with a fully programmable imposition layout. The project includes the design of a C-like programming language for specifying impositions,

an interpreter engine for building the impositions, file format independent drivers for writing imposed files, and user's manual.

Font Metric Adjustment: Design and implementation of font metric adjustment programs. These programs combine the separate files which supply printer font information and convert them to a common format for adjustment. This greatly simplified the process of preparing PostScript and CORA fonts for printing and previewing with T_EX.

T_EX DVI Page Impositions: Page impositions are layouts of book pages suitable for industrial book printers. Designed and implementation of T_EX DVI based imposition software utilizing existing PostScript driver supplemented with page repositioning software. Project proved feasibility of imposition printing, and had been used to print a dozen books before **Impose** replacement program was completed.

PS-TeKnoColor: Co-developed *PS-TeKnoColor* color printing system for generating 4-color printer separations. This involved writing Adobe separator compatible output from T_EX input. It has been used since to print hundreds of 4-color and custom-color books.

Illustration Graphics Metalanguage: Co-wrote program to plot parametric function specifications, and output Adobe Illustrator file format. My portion of the project included designing a C-like language, writing a parser in YACC and building a stack machine interpreter. Researched line-smoothing algorithms to discover a technique to convert curves estimated with (literally) thousands of points into Besier curves used by Illustrator. When finished the program could generate nearly complete graphs as Illustrator files ready for artistic final touches.

IEEE Journal Management Software: Co-developed journal management system to aid production oversight of two IEEE journals. This project included installing PostGres database, and writing a TERMCAP/CURSES menu interface to PostGres database.

T_EX DVI to PostScript and CORA: Designed and implemented T_EX DVI to PostScript and CORA translators used to proof and print books to high resolution typesetters. Maintenance and documentation of these programs on an ongoing basis including adding support for color processing, impositions, custom publishing, and tints and patterns.

Employment

June 2000–Present Senior Systems Programmer, Communications & Middleware Technologies, Rensselaer Polytechnic Institute, Troy NY

Technical manager for RPI email system. Installing, maintaining and writing programs in support of the RPI email system, including Webmail, Respite anti-spam system, listproc and sympa. Writing programs to convert proprietary stored webmail to IMAP. Email Log Analysis and Search program.

December 1995–June 2000 Senior Systems Programmer, Server Support Services, Rensselaer Polytechnic Institute, Troy NY

Primary responsibility for server and server software including Email (qpopper, sendmail), Usenet, AFS, FTP. Support for installed software packages on SunOS, AIX, SGI workstations.

October 1994–December 1995 Systems Programmer, ITS, Rensselaer Polytechnic Institute, Troy NY

AFS file system cluster, DFS, DCE, Keberos, Software package installation and support on SunOS, Solaris and AIX workstations including X window system and La/T_EX.

June 1990–October 1994 Director of Software Development, Publication Services, Champaign, IL

Design, implemented and maintenance of T_EX-based typesetting system on Gould and Sequent super-mini computers. Writing programs in support of typesetting system including dvi2ps and dvi2cora, the PS-T_EXnoColor 4-color typesetting system, and Adobe Illustration Metalanguage to convert parametric equations into textbook quality graphs.

Configuration and maintenance of UNIX, X Window terminals and Macintosh networks. Wrote user documentation and supplied user support for programs and system.

- June 1987–June 1990** System Administrator, Typographer Publication Services, Champaign, IL
System administrator for Guild and Sequent super-mini computers. Installation and maintenance of T_EX software, writing T_EX macros for book designs according to publisher specifications, installation of X window terminals, using Metafont to convert outline fonts to PK fonts for xdvi.
- Sept. 1986–May 1987** University of Illinois, Department of Psychology, Champaign, IL Graduate Teaching Assistant: Preparation and presentation of course material. Presentation of assignments using IBM PC computer lab. Individual instruction of students.
- August 1983–July 1986** University of Illinois, Department of Psychology, Champaign, IL Graduate Research Assistant: Design, implementation and analysis of experiments in memory, skill learning, problem solving and Computer Human Interaction. Supervision of undergraduate assistants.

Papers and Presentations

- Sofka, M.D. "Spam, Spyware and Viruses", Presentation to New York State Library Administrative Assistance conference, Sage Colleges, Troy, NY, June 2009.
- Sofka, M.D. & Schwartz, G. "Vi@9ra, M0r+gages, and RoL3x w@tch3s: Spam on Rensselaer's Email Servers" Presentation to Rensselaer Polytechnic Institutes Deans Council, February 2, 2005.
- Sofka, M.D., "Spam, Spyware, Viruses and Spam: How the Internet has become an unfriendly place" Talk presented to the Rensselaer Retirees Lunch and Learn seminar, February 13, 2004.
- Drineas, P., Krishnamoorthy, M.S., Sofka, M.D., & Yener, B., "Studying E-mail Graphs for Intelligence Monitoring and Analysis in the Absence of Semantic Information," Symposium on Intelligence and Security Informatics (ISI'04), June 2004.
- Sofka, M.D., "Mythen des Skeptizismus", *Skeptiker*, Jahrgang 13 (2000), Heft 1, 18-28.
- Sofka, M.D., "You Have Spam," Talk presented to the Upstate New York Systems Administration Guild, April 1, 1999.
- Sofka, M.D., "T_EX to HTML Translation via Tagged DVI Files," North-East T_EX Users Group Conference, New York City, March 22–24, 1998, *TUGBoat*, 19(2), 214–222, June 1998.
- Sofka, M.D., Book "Review of *Writing With T_EX*, and *T_EX and L^AT_EX: Drawing and Literate Programming*, by Eitan Gurari, *TUGBoat*, 18(1), 37–38, March 1997.
- Sofka, M.D., "Color book production using T_EX," *TUGBoat*, 15(3), 228–238, 1994.
- Sofka, M.D., *User's Guide to Building Impositions with Impose*, Internal document, Publication Services, Inc., 1994.
- Sofka, M.D., *The P_ST_EX technical manual*, Internal document, Publication Services, Inc., 1992.
- Metzger, R.L., Miller, M., Cohen, M., Sofka, M., Borkovec, T.D., "Worry Changes Decision Making: The Effect of Negative Thoughts on Cognitive Processing," *Journal of clinical psychology*, 46(1), 78, 1990.
- Sofka, M.D., "The role of automatic activation versus reminders in superordinate frequency judgments," Master's thesis. University of Illinois, Urbana-Champaign, IL., 1987.
- Ross, B. H., & Sofka, M. D. "Reminders and the use of analogies between problems." Paper presented at the 58th annual meeting of the Midwestern Psychological Association. Chicago, IL., 1986.
- Ross, B. H., & Sofka, M. D. "Reminders: Noticing, Remembering and Using Specific Knowledge of Earlier Problems." Unpublished manuscript, University of Illinois, Urbana-Champaign, IL., 1986.

Sofka, M. D., Ross, B. H., & Barsalou, L. W., "The role of automatic activation in superordinate frequency judgments." Paper presented at the 58th annual meeting of the Midwestern Psychological Association. Chicago, IL, 1986.

Metzger, R. L., Miller, M., Sofka, M. D., Cohen, M., & Pennock, M., "Information processing and Worrying: Two studies of concept formation." Paper presented at the 17th annual meeting of the American Association of Behavior Therapy. Washington D.C., 1983.