Chris Pirazzi

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Work Experience

September 2002–Present **Independent Software Engineer**
Lurkertech, Menlo Park, CA (lurkertech.com)
- Offering **contract services** in the area of **audio, video, and synchronization**
- Wrote software as well as specifications and documentation for varied clients
- Wrote a detailed **uncompressed QuickTime file format specification** (began 1998) that became Apple's official standard for uncompressed Y'CbCr video in QuickTime files and a model for subsequent MPEG-4 international file format standardization

June 2006–Present **President**
MapFling, Menlo Park, CA (MapFling.com)
- Conceived, wrote, tested, and completed MapFling.com, **Web 2.0 AJAX application**
- Combines **Google Maps** with **TinyURL**-like ease of email/IM/blog/web delivery
- Solved many difficult **cross-browser** issues, including correct **back button** handling
- **MySQL** database-backed site with **Perl** scripting and **JavaScript DOM/AJAX** front-end
- Streamlined **no-login-required** design to encourage visitors (Google AdWords supported)

July 2003–Present **President**
Word in the Hand, Menlo Park, CA (word-in-the-hand.com)
- Designed and shipped **Thai-English Software Dictionary** for PalmOS PDAs
- Unique **Search-by-Sound** feature allows users to search without knowing Thai alphabet
- Partnered with Paiboon Publishing, which provided the text of existing paper dictionary
- Wrote extensive Perl **Unicode text processing** code to import legacy Thai format
- Designed Thai **font rendering engine** for PalmOS with multiple sizes and mark handling
- Engineered novel **text compression algorithm** to crush 21,000 entries to just 710kb
- Did **website**, **promotion** and **marketing** myself, set up **e-commerce** and **resellers**
- Dictionary positively reviewed in **Bangkok Post** and other websites; still selling today
- Created database-backed **copy protection / registration** system to prevent piracy
- Tested on dozens of PalmOS devices across more than 6 OS versions; I do all support

July 2003–Present **Independent Web Design** to support my various projects:
- slice-of-thai.com and allaboutpai.com
  – My **ad-supported** sites about Thai culture, language, travel, and food
- thailandfever.com
  – I **co-authored** this bilingual Thai-English cultural guidebook and designed the website
  – Published November 2004; sold **12,000+** copies so far via website, bookstores, Amazon
- worlds-stupidest.com
  – Family of **voting-based social bookmarking** websites I created in December 2006
  – All HTML and deployment is automated with **database-backed Perl scripts**

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Work Experience

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June 2000 – September 2002

Lead Engineer
Generic Media Incorporated, Menlo Park, CA (venture-funded internet startup)

- Part of founding team of 5 engineers, designed and implemented unique **internet service** to simplify **audio/video streaming/download** in multiple formats and at multiple bitrates:
  – automatically **transcodes and serves** a publisher's master file using Windows Media, Real, QuickTime, mp3, or PDA movie formats at bitrates from modem to broadband.
  – publishers deploy a **single link** which automatically senses end-user's media players and connection speed (without using plugins) and provides them with the best audio/video.
- Led discussions/debates and **guided design** on technical topics of interest to entire team.
- **Specified projects** for team and helped write **engineering schedule**
- Gave several **technical presentations** for investors and potential customers and partners.
- Wrote C/C++ and Apache mod_perl Perl code for streaming/download HTTP front-end
  – Acquired deep understanding of **HTTP protocol** and streaming/download **metafiles**.
  – Created **localized HTML GUI** with both server- and client-side scripting (JavaScript)
  – Seamlessly integrated our streaming audio/video service with a **CDN** (**Akamai**)
- Created database-backed **automatic server installation and upgrade** mechanism
  – completely **hands-off**: formats disk, installs OS, configures OS and apps over the network
  – plug new systems into rack, add them to database, in **50 minutes** they are up and running
  – implemented web-based **configuration and monitoring GUI** used by NetOps team.
- Wrote C/C++/Perl-based status and debugging **server farm message collection** system
  – precisely **timestamped** messages from multiple systems **synchronized** for analysis
  – required thorough knowledge of TCP, UDP, broadcast, sockets, Winsock, etc.
  – used throughout development and debugging of our distributed system
  – used to gather detailed operation data for a separate uptime/usage monitoring system
- Designed self-monitoring, self-healing **server farm** in **co-location facility**, which included
  – 8 HTTP servers (account maintenance GUIs, streaming metafile generation, download)
  – 8 Streaming servers (Real, Windows Media, QuickTime, Shoutcast (mp3))
  – 50 Transcoding servers (Generic Media's custom software)
  – **Load Balancers** (HTTP, FTP), DNS servers, Oracle Database, **Routing Switch**, etc.
  – Mix of **Linux, Windows, and Solaris** boxes in tiered firewall configuration.
  – Brought up 1.0 in colo myself, trained NetOps team to maintain/upgrade future versions.
  – System handles most failures automatically, reports all failures via **SNMP counters**
- Designed, implemented, and optimized Palm-OS-based **color video codec** in C/C++.
- Implemented HTML-based **Oracle/SQL database table editor** to aid development
- Wrote nearly all **internal technical documentation** and some **marketing material**
- Named in **2 US patents** (more patents are pending):
  #7242324 Distributed on-demand media transcoding system and method
  #7155475 System, method, and computer program product for media publishing request processing (most of which I wrote).

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Work Experience

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April 1999 – December 1999

Director of Video Production Products
Viewgraphics Incorporated, Mountain View, CA

- Company lead for Viewgraphics SDxstream, VideoPump SD, HDStore, VideoPump HD – world's first uncompressed video I/O cards for standard PCs and standard filesystems.
- Determined **product schedule** and **feature set** for engineering, manufacturing, and sales.
- Conducted 10 sales and **technical market research** trips to 8 cities in 3 countries.
- Technical and business contact for roughly **20 active VARs**. Published **newsletter**.
- Answered most pre-sales, customer and VAR programming questions directly. Wrote many documents and **code examples** to streamline pre-sales and developer support.
- With sales team, signed on several new VARs.
- Designed Viewgraphics **Clipper** VTR control application
  - centerpiece of HDStore and SDxstream products.
  - invented software technique for frame-accurate **VTR control** without custom hardware.
  - negotiated **business contract** with third party for GUI implementation, saving many months of development time.
- Solely responsible for evaluation, **qualification** and choice of PC and disk platform.
- Allocated limited pre-release hardware and engineering time to VARs and beta customers.
- Coordinated 7 people and around $400k of equipment for 3-month promotional **road show**.
- With president, designed **booth** for SIGGRAPH, SMPTE, and IBC tradeshows.
- Designed **advertising**, booth signage, trained booth staff.
- Wrote several **press releases** and conducted on-site and telephone **press interviews**.
- As of November 1999, products described or reviewed in over 30 trade magazine and newspaper articles. HDTV product won two industry awards.

January 1998 – February 1999

Senior Software Engineer
Viewgraphics Incorporated, Mountain View, CA

- Shipped the **SDxstream** NT-based uncompressed serial digital video editing system.
- Uncompressed non-linear editing and effects product. Uses standard QuickTime files on an NTFS filesystem. Did for $12,000 what the competition did for $120,000.
- Steve Jobs demonstrated SDxstream at his **NAB 98 Keynote Address**.
- Wrote board's **QuickTime components**: Video Digitizer, Clock, Image Decompressor, Video Output, Sound Input, Sound Output, Image Compressor, Effects.
- Wrote the Windows **control panel GUI** for the board.
- Wrote **MMX-accelerated image processing code** to perform full-size, uncompressed video effects in real time on one CPU.
- Worked with Apple QuickTime and **Adobe Premiere** engineers to tune for uncompressed.
- Wrote all **user manuals** (14,000 words plus figures).
- Wrote a detailed **uncompressed QuickTime file format specification** which became Apple's official standard for uncompressed video in QuickTime files.
- Wrote the pre-sales FAQ at **www.sdxstream.com**.
- Completely responsible for technical relationship with all external SDxstream developers.
- Created a hands-off SMPTE 259M full-raster analyzer using a PC linked to a **logic analyzer**, which helped us fix many bugs.

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Work Experience

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June 1994-
December 1997

Digital Media Software Engineer, Silicon Graphics, Mountain View, CA

- Shipped **mediarecorder**, SGI's bundled audio/video/screen recording application
  - wrote MVR, a synchronized audio/image acquisition and disk storage engine
  - supports 7 SGI video hardware platforms, multiple formats, asymmetric disk striping
  - designed engine API to suit needs of other team members doing GUI etc.
  - full-size, full-rate JPEG recording feature drove optimizations in kernel and libraries
  - stressed all current SGI hardware platforms, drove design of future platforms
- Created "The Lurker's Guide to Video:" **http://lurkertech.com**
  - explains complex video concepts, supplements official SGI documentation
- Created and shipped tserialio, millisecond-accurate **time-stamped serial I/O** driver/API
  - used for field-accurate RS-422 video deck control, motion capture, MIDI, ...
  - handled issues from internals of UNIX kernel (locore) to high-level deck control API
- Extended UST/MSC media **synchronization** API from audio to video, graphics, serial, etc.
  - produced company-wide specification; center of communication on UST/MSC
  - implemented driver and user-level support on Indy video and graphics platform
  - wrote all documentation; presented UST/MSC in a talk at SGI's **developer forum**
  - influenced hardware design of O2, Octane, Origin, and Onyx2 platforms
  - developed testing mechanism using LTC and VITC timecode; enhanced VITC parser
- Member of **O2 hardware/software bringup** team
  - drove issues for full-size, full-rate **uncompressed video** recording and playback, including coordination with Apple Computer on QuickTime file format optimizations
  - used scopes, logic analyzers to chase down several hardware and software bugs
  - explored SMPTE 272M embedded audio, RS-422 electrical issues, VTR emulation
- Created prototype **ISDN speech telephony** driver and applications using Indy ISDN
  - intranet radio call-in talk show, IndyPhone, voice response system with internet link
- Created several **3-D graphics video demos** including Impressionist video program, poly
  - poly used for R5000 launch, ships with OS.

August 1991-
June 1994

Consultant/Member of Technical Staff, Silicon Graphics, Mountain View, CA
(worked on an IRIS Indigo in Princeton dorm room and on campus IRIS workstations)

- Extended **audio file library** to support several audio file formats as well as built-in sample format conversion, sample compression, and sample rate conversion.

Summer
1991,92,93

Software Engineer, Silicon Graphics, Mountain View, CA

- Designed and shipped SGI's first four **audio system utilities**, including an X-Windows based audio file manipulation utility (soundfiler). Three are still shipping.

July 1987-
August 1990

Programmer, Mozart Systems Inc., Burlingame, CA
(formerly Aspen Research Inc.)

- Independently designed and implemented **database support** for Mozart's software product.
- Worked in group to restructure product's **windowing kernel** and control structure for port from DOS to OS/2, Windows, and beyond.

Technical Skills

General:
- Professional programmer since 1989
- Experienced in shipping products and deploying and upgrading live websites at every level, from my one-man entrepreneurial ventures to giant, source-controlled corporate development projects.
- Extensive experience with C and C++
- Extensive experience with Perl (Apache mod_perl and standalone), HTML and JavaScript.
- Versant in SQL; have designed schema and optimized queries with Oracle, mySQL, and sqlite.

Web Application Development:
- Developed and deployed SQL database-backed Web 2.0 AJAX/DOM JavaScript applications.
- Have designed both HTML- and CSS-based layouts and dealt with many browser compatibility issues.
- Deeply familiar with the HTTP protocol, HTTP headers, streaming media audio/video metafiles (e.g. RAM files, ASX files, QT pointer files), HTTP internationalization (Accept-Language header), HTTP load balancing issues, browser-dependent helper/plugin associations (Content-Type) etc.
- Have written many megabytes of HTML documents, including large, indexed technical documents and complex, localized, server-generated HTML GUIs with HTML forms, frames, server push, and JavaScript.
- Engineered scripts for automated HTML generation to streamline development of site navigation.
- Designed fully hands-off colo farm rackmount server deployment system (formatting, installation, and config) using DHCP / TFTP / PXE / Preboot technologies and unique server-side scripting techniques.

Traditional Application Development:
- Developed many C/C++ GUI applications for Win32, X windows and NextStep windowing environments.
- Extensive 3-D graphics programming experience with IRIS GL and OpenGL (on IRIX and Windows).
- Experience developing hard- and soft-real-time applications (even GUI apps) with scheduling constraints.

Digital Media (Audio/Video/MIDI/etc.):
- Extensive experience developing C/C++ code to capture, process, convert, and play audio, video, and MIDI
  - APIs: QuickTime, Video For Windows (VFW), DirectSound, MCI, ActiveMovie/DirectShow/DirectSound, Windows Media SDKs, RealProducer SDK, SGI IRIX digital media libraries.
  - Signal Processing: wrote and optimized shipping MMX-accelerated colorspace conversion and effects code
- Wrote a full suite of QuickTime components from scratch:
  - Video Digitizer, Image Decompressor, Video Output, Effects, Sound Input, Sound Output, Clock
- Familiar with details of QuickTime file format; Apple adopted my extensions for uncompressed video.
- Have implemented frame-accurate (field-accurate) direct Sony 9-Pin protocol RS-422 video deck control.
- Intimately familiar with details of common television broadcast/production video formats:
  - Standard Definition: 480i NTSC (SMPTE 170M), 480i SDI (SMPTE 259M/125M), 480P, etc.
  - High Definition: 1080i (SMPTE 292M/274M), 720P (SMPTE 296M), 1080sf, 1080P/24, etc.
- Programming experience with AIFF, AIFF-C, WAVE, NeXT/Sun audio file formats.
- Familiar with general properties of common audio and video data and file formats, including
  - G.722 adpcm, G.711 ulaw, AC-3, MPEG audio data formats
  - FLV, MPEG video, JPEG, H.261, Cinepak, Indeo, QuickTime video/animation data formats
  - QuickTime, Real, Windows Media, MPEG systems, AVI, OpenDML AVI, OMFI file formats.

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Technical Skills

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Internationalization:
- Programming experience with Unicode and other text encodings, TrueType and other font technologies
- Experienced with internationalization issues which arise from complex languages such as Thai and Arabic
- Prototyped ICU-based C++ Boost Unicode string library with conversion, collation and normalization.
- Have developed scripts to perform difficult text-to-text or text-to-database conversions of large bodies of loosely-formatted international text.

Systems-Level Experience:
- Assembly language programming experience with x86 (with MMX/SSE/SSE2), and other architectures.
- Systems programming experience with Windows (98/NT/2000/XP/Vista), Linux (RedHat), IRIX, SunOS/Solaris, and HP/UX OS, including network sockets, real-time scheduling, and multi-threading.
- Driver and kernel internals (locore) programming experience with IRIX (SGI UNIX).
- Experience optimizing high-bandwidth SCSI RAID throughput on general-purpose workstations and PCs. – sustained 20 (standard video) and 140 (high definition video) megabytes per second on PCs in year 1998!
- Solved many problems using logic analyzers, oscilloscopes, video waveform monitors, SCSI analyzers, etc.

Other:
- Familiar with ISDN BRI implementation, call control, DTMF recognition/generation.

Education

1990-1994 **Princeton University**: BSE Computer Science, Summa Cum Laude
Grades: 4.1 (A+) Departmental, 3.9 Overall
Courses Include: Computer Sound/Music, Computer Graphics, Algorithms, Data Structures, Operating Systems, Compilers, Advanced Physics, Advanced French, European Lit.
Honors: Tau Beta Pi Honor Society (inducted as junior), Microsoft Technical Scholarship, Phi Beta Kappa, Sigma Xi, graduated Summa Cum Laude.

Other Interests

- Thai Language (fluent in Thai; studied for 8+ years. Wrote Thai-English dictionary software)
- Thai Culture (published book on Thai-Western romantic relationships; sold 12,000+ copies so far)
- Music Composition and Computer Music
- Computer Video/Computer Art (created MEZ: software-based, real-time computer graphics video effects processor with camera and large rear-projection display; debuted at Burning Man 2002).
- Holography (completed 2-month project; produced several plates)
- Theater Crew (1200+ hours of work including a 7-state tour)

References

- Available on request.