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http://set.hk

Summary

Passionate SWE with experience shipping apps for desktop, mobile, and cloud.

Graphics programming demos/code samples: http://set.hk/gfx.html

- Enthusiastic about software architecture, design patterns, refactoring, and API design.
- Master of comprehending and debugging large codebases, open source technologies.
- Judiciously adopts new tools, languages, and development methodologies.
- Stays focused on high-level objectives while polishing the small details.

January 2019–
February 2020
(1 year, 2 months)

Staff Software Engineer, Core Game Systems, Cryptic Studios, Inc., Los Gatos, CA
[C/C++, MSVC, Direct3D 11, Clang, Xbox One, PS4, Wwise, FMOD, PhysX, HLSL, DirectCompute, GPGPU, SIMT, SIMD, RenderDoc, PBR]
Cryptic are the makers of several MMO titles for PC and console including Star Trek Online, Neverwinter, and the upcoming Magic: Legends.

- Touched many game systems in one way or another: particle effects, rendering, animation, audio, physics, and cinematics, each of these a stack of components: editor, asset pipeline, gameplay integration, runtime simulation, and debugging telemetry.
- Was instrumental in bringing the new particle effects system closer to production for upcoming title Magic: Legends.
  - Added or improved many compute modules forming the atomic operations of a particle system: basic math operations, transforms, materials, lifecycle management, and interactions with outside systems.
  - Used various techniques to improve performance: better tooling for the artists, a new LOD system, and enhancements throughout the pipeline to reduce overdraw.
  - Revamped the architecture of the debug tool to make it easier to maintain across PC and console.
- Built a new system for one-shot sound triggers coming from other game systems, freeing both the engine and audio designers from the overhead of using the effects system for this.
- Dipped into the in-house frameworks to fix bugs and add bits in support of my game systems work: editors UI, asset pipelines, error reporting, etc.
- Fixed bugs in the live games including several 64-bit issues in a custom memory allocator and a codec thread starvation problem on PS4.
- Upgraded third-party middleware and tools (e.g. Wwise).
- Prototyped new features for the ragdoll physics and animation system to unlock new game design possibilities.

June 2017- December 2017 (7 months)	Software Engineer, Thumbtack, San Francisco, CA [Golang, PHP, JavaScript, PosgreSQL, BigQuery, Grafana, Mode Analytics] Thumbtack is an online service that matches customers with local professionals. I worked on both frontend and backend components.

- Collaborated with designers and other engineers to implement frontend features for the site's professional users. This work was done in PHP and JavaScript.
- Built reports for realtime and offline reporting in Grafana and Mode Analytics.
- Ran A/B tests to validate feature variants.
- Worked on the core service for matching and pricing projects in the two-sided marketplace. This work was in Golang.
- Participated in the detailed specification and planning process for new features and infrastructure improvements.

August 2014- April 2017 (2 years, 9 months)	Founder, Filmosaur, San Francisco, CA [Ruby, Rails, PostgreSQL, HTML5, CSS3, JavaScript, jQuery, Heroku]

- Created a search engine for streaming movies.
- Built a database of ~110K feature films, aggregated from EIDR, Freebase, and Wikidata.
- Continuously indexed ~330K streams from the major providers: Netflix, Hulu, Amazon, iTunes, YouTube, and Google Play.
- Implemented a search frontend using Ruby on Rails, JavaScript, and jQuery.

March 2012– March 2015 (3 years)	Independent iOS App Developer [Objective-C, iOS, Ruby, PostgreSQL, Amazon EC2] Released two iOS apps into the App Store:

- Deal Steal!: Tracks flash sales on several outdoor sports websites including REI.com and sends notifications when items matching a set of keywords go on sale.
  - Ruby/PostgreSQL backend hosted on EC2.
- TrueLoop: Practice and learn music by slowing down and looping sections of songs.
  - Imports songs from your iTunes music collection.

June 2012– July 2014 (2 years, 1 month)	Contract iOS Developer, Monkey Republic Design, San Francisco, CA [Objective-C, RestKit, iOS] Implemented two iOS apps for MRD clients:

- Healthcare services search and comparison app (think "Yelp for healthcare").
- Myers-Briggs personality types reference app for business users.

July 2011– October 2011 (4 months)	Contract iOS Developer, Slice, Palo Alto, CA [Objective-C, REST, CoreData, iOS]

- Wrote the first version of Slice's iPhone app for tracking your online purchases.
- Mentored another engineer with beginning iOS development.
- Named one of the "Best Productivity Apps of 2012" by Business Insider magazine.

April 2006– June 2011 (5 years, 2 months)	Software Engineer, Apple, Cupertino, CA [Objective-C, C++, Xcode, CoreAudio, MIDI, Mach threads, CoreGraphics, many internal frameworks, macOS] • Built the first few versions of MainStage [https://www.apple.com/mainstage/], an app for live music performance, as part of the Logic Studio music production package. • Helped customize and tune the Logic audio engine for use on the stage.
August 2006 (1 month)	Contract Software Engineer, Vidiator, Mountain View, CA [Java, C++, x86 Assembly, Win32] • Diagnosed and patched a slow memory leak in a closed-source C++ DLL so it could be used within the JVM.
July 2005- March 2006 (9 months)	Software Engineer, iXsystems, San Jose, CA [C++, Java, Swing, CORBA, PHP, MySQL, SugarCRM] • Prototyped an appliance server framework using C++ and CORBA, with a Java/Swing UI. Designed to support a product line of infrastructure management solutions. • Prototyped a DNS and DHCP solution based on ISC's BIND, using appliance framework. • Wrote and maintained several internal web tools for sales and production using PHP with MySQL, integrating them as modules into the open source SugarCRM [http://www.sugarcrm.com/] system. • Performed various software integration tasks to facilitate the sale of rack-mount server hardware, such as compiling custom kernels, troubleshooting drivers, and performance tuning.

October 2004–
May 2005
(8 months)
	Network Programmer, Simple Telecom, Reno, NV
	[C, Python, The SIP Express Router, RTP, LDAP, MySQL, PHP]
	• Wrote modules for the SIP Express Router [http://www.iptel.org/ser/] open-source software:
	  - An active-monitoring load balancer for proxying SIP calls.
	  - LDAP authentication backend.
	  - Caller ID and phone number registration.
	  - Concurrent call limiting.
	• Added features to a VoIP broadcasting service:
	• Fixed bugs and added minor features to the client extranet using PHP with MySQL.
	• Designed an SSO (Single Sign-On) system, integrating PAM, NSS, Apache, Samba, Qmail, and Courier-IMAP with an LDAP backend.

April 2004– October 2004 (7 months)	Independent Software Developer Projects included: • XML transformation engine for ePilot's SDS2 system [http://www.epilot.com], providing an identical API to Google's AdSense. [C, DHTML, JavaScript, GNU/Linux] • Programmable USB sound recorder for an embedded system. [C, FreeBSD, GNU/Linux] • X Window System continuous screen capture program with network backend. [C, Xlib, Solaris] • OSD (on-screen display) volume control for dashboard PC. [C++, Qt, embedded GNU/Linux]

January 2004- April 2004 (4 months)	Contract Systems Administrator, Egation Communications, Fremont, CA [FreeBSD, Qmail/VPopMail, Cisco 4000 Apache, PHP, BillMax] • Documented administrative procedures. • Customized and skinned the IMP webmail application in PHP.
June 2003- October 2003 (5 months)	• Devised a scalable system for virtual hosting of web and email services using VPopMail and Apache. • Assisted the buildout of initial wireless infrastructure. • Performed day-to-day administration and maintenance of 8 FreeBSD servers. • Provided internet services such as mail (Qmail), web, and DNS. • Installed and maintained an ISP billing system (BillMax).
August 2002– February 2003 (7 months)	Software Engineer, OffMyServer, San Jose, CA [C, PXE, FreeBSD, GNU/Linux] • Developed front-panel server management interface via LCD display. • Wrote FreeBSD drivers for several server health monitoring chips. • Deployed an unattended install system for FreeBSD and GNU/Linux server platforms using Intel PXE. • Documented system install procedures for use by technicians. • Researched and tested new software technologies relevant to the server/appliance market.
May 2001– September 2001 (5 months)	Associate Engineer, Wind River, Alameda, CA Continued sysadmin duties after acquisition of BSDi by Wind River.
September 2000– May 2001 (9 months)	Junior Systems Administrator, Berkeley Software Design (BSDi), Concord, CA [FreeBSD, Sendmail, BIND, NIS, NFS, Cisco 4000] • Maintained hardware and software for a network of ~15 FreeBSD servers. • Ran software services including mail, DNS, file sharing, and source control. • Implemented automated backups. • Provided some support for Win32 and MacOS desktops. • Routine network/firewall maintenance on Cisco 4000 series routers. • Contributed source patches and documentation to the open-source FreeBSD project.
Sept 1999– Sept 2000 (1 year)	IT Assistant, Delphi Information Sciences, Santa Monica, CA [WinNT/98/NT/2K, Lotus Notes, MS SQL, MS Terminal Server] • Performed software and hardware maintenance on ~15 WinNT 4.0 and several Win2K servers. • Ran email, groupware, database, and remote login services. • Provided help desk support for ~25 workstations.

Side Projects   Port of Quake 3: Arena to the iPhone 3G.
    • C, OpenGL ES, iOS
    • https://github.com/sethk/quake3-ios
    • Work now included in the ioquake3 project [http://ioquake3.org]

OS X driver for the Smartfish Engage keyboard.
    • C++, IOKit, USB, Darwin
    • Workaround for firmware that confuses the USB stack.
    • https://github.com/sethk/SmartfishEngageKeyboard

Wrapper for Steinberg VST plug-ins to be used as Audio Units.
    • C++, CoreAudio, Objective-C, Cocoa
    • https://bitbucket.org/sethk/vstau
    • Supports surround sound output.

References   (Available by request)