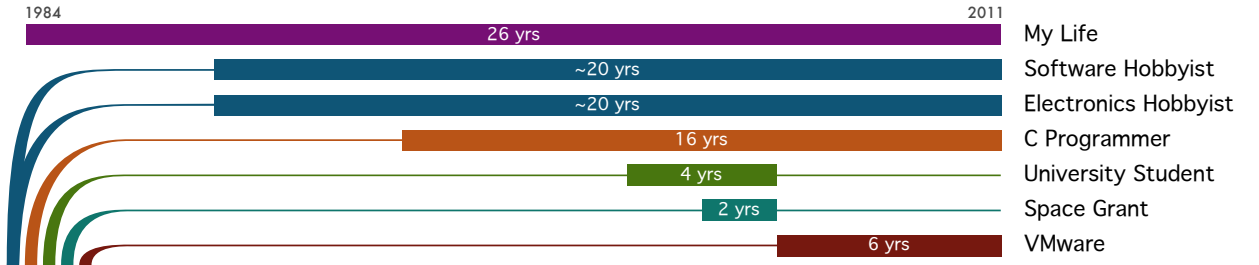


M. Elizabeth Scott

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Personal Projects

- CIA.vc- web service for real-time code checkin notifications, used by 10,000 OSS projects
- Fyre- histogram based chaotic function renderer, won the SIGGRAPH Student Research Competition in 2004
- FPGA based RAM trace and injection hardware for game console reverse engineering
- Temporal Hex Dump- highly responsive UI for browsing large RAM trace datasets
- Software-only (bit-bang) implementation of a full-speed USB host controller
- Lightweight protocol stacks for USB, Bluetooth, and IP
- 3D terrain engine with continuous level-of-detail algorithm
- 8086 to ARM static binary translator
- Closed loop DC motor control system for a sewing machine retrofit
- Miscellaneous USB-attached devices, firmware plus kernel-mode or user-mode drivers
- Metalkit- library OS and tiny bootloader for x86
- PicoGUI- scalable GUI framework for embedded systems

Core Skills

- Systems software generalist
- Problem solving and optimization generalist
- Reverse engineering
- x86, AMD64, Microcontrollers, ARM
- C, C++, Python
- 2D and 3D graphics drivers and apps
- Tool development
- Digital electronics

Education

- BS in Computer Science
- University of Colorado, Boulder

Colorado Space Grant Consortium

- Command and Data Handling lead, Citizen Explorer 1 satellite
- Microcontroller hardware and firmware for command routing, power control, and fail-safe systems
- Innovative USB software modem implementation for AX.25 radio communications
- Automated testing infrastructure for μ C systems

VMware, Staff Engineer

USB

- Isochronous audio/video streaming support for EHCI
- Ported to Mac OS X
- Mac OS Kernel extension for claiming device ownership
- Implemented the virtual xHCI (USB 3.0) controller
- Open source USB traffic analyzer tool, with novel graphical visualization (<http://usb-analyzer.sf.net>)
- Virtual devices

Graphics

- Architect / Tech Lead for GPU virtualization
- Part of the small initial team responsible for virtualizing 3D accelerated graphics hardware
- Rearchitecture of 2D compositing subsystem to support advanced multi-window/multi-screen display
- Performance-focused rearchitecture of concurrency and memory management
- Reverse engineering application code for driver debugging
- Sophisticated real-time and offline debugging and performance tuning tools
- Shaders for fast high-quality video rendering, image scaling
- Publicly documented our virtual GPU hardware, wrote open source example code

Other

- Low-level memory management for Mac OS X
- Presented internal tech talks and training sessions
- Implemented a fully virtualized Bluetooth controller and protocol stacks
- Fixing what needs to be fixed
- Custom debugging hardware for initial VMM bringup on 64-bit Mac Pro

My Life
Software Hobbyist
Electronics Hobbyist
C Programmer
University Student
Space Grant
VMware

1990–now

- More projects at <http://scanlime.org>
- My work has appeared on many tech blogs now, including Wired

2001-2005

2003-2005

2005-2011

- Two patent applications filed
- Presented on GPU virtualization at USENIX WIOV 2008

