San Francisco, CA **Eric D. Cohen** ericcohen@gmail.com

Massachusetts Institute of Technology **Cambridge, MA**
M.Eng Electrical Engineering and Computer Science June 2006
Thesis: *Vibration Detection in Turbomachinery Using Non-Contacting Sensors*

Massachusetts Institute of Technology **Cambridge, MA**
S.B. Electrical Engineering and Computer Science June 2002

Spare Time: Reverse engineered display interface of 45 year old calculator into Raspberry Pi based programmable clock and wrote Android controller app (see http://epieye.com/nixie and https://youtu.be/mibd44goZ-E)
Software: C, Linux, C++/Boost, Python, VHDL, Lua, MATLAB, various assembly, various RTOSs, SQL, Chaco/Mayavi
Hardware: amd64, Xilinx FPGA, ARM/OMAP, DSP, various embedded ICs, i2c, PCB layout, general test equipment

PernixData, Inc. **01/2014 – Present** **San Jose, CA**
Staff Engineer
- Implemented **multi-slab memory allocator**; order of magnitude latency improvement in product under VDI
- Engineered high performance **chunk allocator**
  - Efficiently caches, allocates, deallocates and manages pools of SSD blocks for upper filesystem layer
- Prototyped **PCI** non-transparent bridging **(NTB) Linux kernel module** and wrote firmware for **PLX** switch
- Implemented **in-kernel sub-microsecond stats/histogram** infrastructure: data path core of Architect product
  - Wrote **Python visualization** for 3D rendering of histogram data
- Developed ground-up **Windows 2012/Hyper-V** storage acceleration prototype
  - Write-back SSD cache implemented as filesystem **minifilter kernel driver**
- Created hardware monitoring and remediation module for **high availability** (**HA**) system
  - JSON stats stream for UI and analytics
  - Policy module to support HA action upon hardware failure(s)
- Implemented distributed object metadata store using **Zookeeper/Curator**
- Extensive work in area of performance monitoring and optimization (kernel and user-space)
- **Technologies:** C, C++, Python, VMWare ESX, Zookeeper, NTB, data visualization, storage virtualization

BBN Technologies, Inc. **05/2009 – 12/2013** **Cambridge, MA**
Senior Scientist
- Lead FPGA/VHDL engineer for gigabit+ wireless modem
  - Responsible for all hardware and FPGA support, including high-speed DAC and ADC FMC boards, i2c and SPI busses, gigabit ethernet, packet processing/decoding, USB control interfaces, Linux interfaces
  - Developed variant of QPSK modulation ("Cohen Waveform") to compensate for flawed analog hardware
- Designed and implemented novel highly scalable network transport in **C++/Boost** employing forward error correction (**FEC**) and dynamic buffering to reliably stream real-time multicast AV data over unreliable high-jitter networks
- Work with all elements of WNaN radio project: network software, RF, digital hardware, packaging, field support
  - **Principal Investigator** (PI) multiplexing transceivers between data network and out-of-band sensing
  - Added multi-datarate support to wireless MAC and developed novel distributed rate selection algorithm
  - Added **TMS320** DSP support to radio platform; ported GSM voice codec to DSP
  - Facilitate port of WNaN network stack from **Integrity** to **Linux/Xenomai RTOS**
- Designed very large scale (20,000+ node) mixed radio network for CTC program
  - Antenna selection, fuel-cell power supplies, net topology, link budget, traffic analysis, OPNET simulation
- Developed MIFARE **RFID** simulator and implemented various attacks using Proxmark RFID reader
- **Technologies:** C, VHDL, C++, FPGAs, Lua, Python, RTOSs, multicast networking, data visualization

SunPoint Technologies, Inc. **09/2008 – 05/2009** **Cambridge, MA**
VP of Strategy (Cofounder)
- Co-founded company to develop passive bimetallic solar module tracking platform
- Co-inventor on **patent #8,499,756** (*Thermal-Mechanical Positioning For Radiation Tracking*)
- Awarded **1st place MIT 100K Renewable Energy Prize**
- **Technologies:** Data acquisition, motion control, hardware fabrication

jetEye Technologies, Inc.   06/2006 – 01/2009   Cambridge, MA
President (Cofounder)
- Awarded **1st place Yale 50K, 2nd place Columbia/DFJ 250K, semi-finalist MIT 100K**
- Developed real-time hardware demo for detecting failure modes in turbines using ECS/VRS sensors
- Granted **patent #7,509,862** (*System and Method for Providing Vibration Detection in Turbomachinery*)
- Created gEye embedded three-axis low-power signal-processing data-logging accelerometer hardware
- **Technologies:** MATLAB, C, C++, MSP430, electronics design, mechanical modeling/analysis, sensors

MIT Gas Turbine Laboratory   01/2005 – 05/2006   Cambridge, MA
Research Assistant
- Conceived mathematical models and algorithms for turbine blade vibration and failure analysis
- Fourier analysis, time-domain analysis, adaptive filtering, zero-crossing processing, Hilbert transform
- Developed automated data processing and visualization system in **MATLAB**
- **Technologies:** C, MATLAB, PERL, sensors, circuits, strain measurement, mechanics

VMware, Inc.   08/2002 – 08/2004   Palo Alto, CA
Software Engineer
- General storage related development on VMkernel and **Linux kernel**
- Developed RAID **drivers** for VMkernel
- Led prototype development of **IDE drive support**
- **Technologies:** C, x86 assembly, GNU tool chain, Linux kernel, virtualization, concurrency

IBM/Almaden Extreme Blue   Summer 2001   San Jose, CA
Hardware/Software Engineer
- Wrote Linux device driver for custom iSCSI hardware
- Created iSCSI hardware simulator, developed threaded iSCSI video server software
- **Technologies:** C, Linux drivers, Altera FPGA, PowerPC

VMware, Inc.   Summer 2000   Palo Alto, CA
Disk Subsystem Engineer
- Designed and implemented high-performance remote disk server and trace-based SCSI simulator
- **Technologies:** C, SCSI protocol, Linux, virtualization

Storefront Media, Inc.   09/1999 – 05/2000   Boston, MA
Chief Architect
- Co-founded company to create technology to sell women's clothing online
- **Technologies:** TCL, SQL, JavaScript, PL/SQL, C, PERL, DHTML, CSS, Oracle database

Panavision, Inc.   Summer 1999   Cambridge, MA
Engineer
- Developed real-time embedded system for processing data streams from movie cameras
- **Technologies:** C, Real-Time Linux, 8051 embedded development, sensor integration

MIT Laboratory for Computer Science   09/1998 - 10/1999   Cambridge, MA
Research Assistant
- Designed and implemented WindowsNT device driver for inertial measurement unit (IMU)
- Modified and debugged large C++ programs and PERL scripts

Robert M. Corley, Inc.   Summer 1996, 1997, 1998   New York, NY
Clerk (Floor of the New York Stock Exchange)
- Take stock orders, retrieve and report real-time quotes, write floor reports, manage commissions/billing

Interests: hardware/software hacking for fun, running, camping, skiing, music, flying (tailwheel, aerobatic), cooking