

## ETHAN BORDEAUX

187 Pleasant St Framingham MA 01701

[ethan.bordeaux@gmail.com](mailto:ethan.bordeaux@gmail.com)

617.412.5597

## WORK EXPERIENCE

### **Software Engineer**

Los Angeles, CA. [www.beatsbydre.com](http://www.beatsbydre.com)

**Beats by Dr. Dre/Apple Inc.**

**09/2013-present**

- Developed and enhanced core communication library used in data transmission between host applications and embedded devices (speakers and headphones). Library runs natively on macOS, Windows, iOS, Android, and embedded processors. Lead or supported integration on all platforms.
- Developed multithreaded C code in an Embedded Linux environment that communicates with web services for media management and playback.
- Developed and managed macOS and Windows customer-facing desktop applications for firmware updates and device configuration in C, C++, Objective-C, and C#.
- Wrote novel real-time audio applications in C and Python.
- Designed and developed internal macOS tools and libraries in C and Objective-C for firmware updates and device verification in manufacturing factories throughout China and southeast Asia.
- Worked in a fast paced Agile/Scrum workplace designing consumer electronics.

### **Software Engineer**

Calabasas, CA. [www.dts.com](http://www.dts.com)

**DTS Inc.**

**08/2012-09/2013**

- Developed Android applications to demonstrate DTS audio processing capabilities.
- Interfaced existing DTS libraries with Android via the JNI.
- Enhanced macOS multimedia applications in C++ using DTS processing libraries and JUCE.

### **Embedded Systems Software Engineer**

Calabasas, CA. [www.line6.com](http://www.line6.com)

**Line 6**

**06/2010-08/2012**

- Developed firmware in C and ARM assembly for multiple hardware devices including effects pedals and audio/MIDI interfaces for iOS and Windows/Mac hardware.
- Wrote and interfaced to low level drivers for peripherals such as USB, I2C, and LCDs for NXP ARM7 and Cortex M3 microcontrollers.
- Worked with Apple's Made for iPhone (MFi) developer constraints including writing firmware to handle in-field updates, identification, authentication, and to comply to Apples' strict low power requirements.
- Collaborated closely with all aspects of product creation and design to define features and determine trade-offs in user experience and development time/product cost.

### **DSP Software/Applications Engineer**

Multiple Locations in MA. [www.mediatek.com](http://www.mediatek.com) and [www.analog.com](http://www.analog.com)

**Analog Devices/Mediatek**

**06/1997-06/2010**

- Supported the development of internal C/C++ compiler tools through benchmarking, run-time library development, and tool chain debug. Wrote Python test scripts.
- Developed, debugged, and enhanced DSP algorithms in C and Assembly Language for ADSP-218x series of Digital Signal Processors and ARM microcontrollers. Algorithms included Audio Codecs (Ogg Vorbis), Speech Codecs (AMR, HR, EFR, FR), GSM Channel Codecs, Real-Time Operating Systems, and Debugging Frameworks.
- Long-term travel to customer sites to integrate algorithms and train customers.
- Worked with IC designers to debug early revisions of our baseband processors.

## SKILLS

**Languages/Platforms.** C (PC and DSPs/embedded processors), C++, Assembly Language (ADSP-218x, ARM7, ARM9, Cortex M3, 6502), Python, Objective-C, C#, Java, Perl, Embedded Linux, Web APIs via Django, and XML/JSON.

**Build/Revision Control.** Makefiles, Git, Mercurial, PVCS, Perforce, SVN and CVS.

**Hardware Debug.** Oscilloscopes and Multimeters. Experience with Logic Analyzers.

**Communication.** Strong Technical Writing and Presentation skills. Experience with Project Management.

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## EDUCATION

Tufts University, Medford MA. [www.tufts.edu](http://www.tufts.edu)

09/1993-05/1997

Bachelor of Science in Electrical Engineering, Minor in Mathematics. Course Work included Digital Signal Processing (two classes plus Senior Project), Communication System Design, Digital Design, Data Structures, Discrete Math, Linear Algebra, and Probability and Stochastic Processes.

## NON-WORK EXPERIENCE

Independent of my employment I founded and developed multiple personal projects relevant to my experience and capability as a Software Engineer.

gettrump.net, [www.gettrump.net](http://www.gettrump.net)

01/2017-03/2017

- REST API to return JSON data analyzing tweets of Donald Trump.
- Written with Django framework and hosted on Heroku service.

PSPSeq, [www.dspmusic.org/psp](http://www.dspmusic.org/psp)

12/2005-01/2009

- Developed a synthesis and sequencing application for writing music on the Sony PSP game system.
- Designed and programmed the entire application including software architecture, synthesizer and sequencer design, algorithmic and platform-specific optimizations, user interface and aesthetic, and documentation.
- Covered in major musician web and print publications and actively used to create and perform music.

SynDevKit and Chiclet, [www.dspmusic.org/chiclet.html](http://www.dspmusic.org/chiclet.html)

01/2001-12/2004

- Developed a custom audio synthesis and music compositional environment for ADSP-218x DSPs using assembly language and Perl (SynDevKit).
- Recruited by and worked with the MIT Media Lab to create a custom ADSP-218x hardware platform (Chiclet).
- Placed in art competitions (Vidalfest 6.0), participated in local art festivals (Boston Cyberarts), and performed using this platform at music and art venues throughout Boston and New York City.

## PUBLISHED ARTICLES AND BOOK CONTRIBUTIONS

- "Implementation of a Modern Adaptive Multirate (AMR) Codec for Cellular Systems Using a Multicore DSP" *Essentials of Moderns Telecommunications Systems*: Chapter 10, May 2004, Artech House Publishers
- "Solving AMR Speech Codec Porting Challenges" *Communications Systems Design*, August 2004, [www.commsdesign.com](http://www.commsdesign.com)
- "Advanced DSP Performance Complicates Memory Architectures In Wireless Designs" *Wireless Systems Design*, April 2000 pages 20-24, [www.wsdmag.com](http://www.wsdmag.com)
- "DSP System Integration" (cover story) *Communications System Design*, December 1999 pages 23-28, [www.commsdesign.com](http://www.commsdesign.com)
- "Choosing A DSP For Low Power Designs" *Electronic Products*, April 1999 pages 59-60, [www.electronicproducts.com](http://www.electronicproducts.com)
- "Integrating Flash Memory In An Embedded Design" (co-authored with Stefan Hacker) *Circuit Cellar*, April 1999 pages 12-19, [www.circuitcellar.com](http://www.circuitcellar.com)
- "Singling Out A DSP For Low Power Designs" (cover story) *Electronics Engineer Asian Sources*, March 1999 pages 28-29, [www.eetasia.com](http://www.eetasia.com)
- "Designing Low Voltage Systems" (co-authored with Jaspreet Singh) *Multimedia Systems Design*, October 1998 pages 46-51, (*magazine out of print*)

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- “Designers Face New Issues As Low-Voltage Levels Decline” (co-authored with Jaspreet Singh) *Wireless Systems Design*, June 1998 pages 32-36, [www.wsdmag.com](http://www.wsdmag.com)

### **CONFERENCE PRESENTATIONS**

- “The High Speed Logger: A Window into a Real-Time System” *Analog Devices General Technical Conference*, May 2007
- “The Importance Of DSP System Integration For Portable And Power Sensitive Applications” *PCS Design Conference*, September 1999
- “Designing Low Voltage Systems” (co-authored/co-presented with Jaspreet Singh) *DSP World Design Conference*, April 21-23 1998