

# Itay Donenhirsch

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## Profile

- Highly motivated and innovative person
- Rich multidisciplinary experience in both software and hardware
- Proven ability to initiate projects, design and implement from scratch
- Ability to take full ownership on projects
- Vast experience with C/C++, OO Design and Programming
- Fluent in Python, Bash and Java
- Experienced in RT/Embedded and Distributed Communications systems
- Rich multi-threading experience
- B.Sc. in Physics and Biology from Tel Aviv University, 2006
- "MAMRAM" (IDF's programming school) graduate, 1995
- Electronics hobbyist and enthusiast. Likes to develop gadgets on my spare time (see site <http://itay.bazoo.org/projects>)
- Hebrew native speaker, fluent in English.

## Experience

### **[2007 - Today] Senior Software Engineer at Imagine Communications**

- Design and development of a scalable distributed data plane Embedded Software Mux over Monta Vista OS for MicroTCA platform. Coded in C++. The Mux serves thousands of session simultaneously.
- Initiated, designed and implemented a Python and Bash based systematic cluster configuration tool. The tool takes as input a description of an entire cluster and configures it.
- Design and development of a Java (POJO) control plane application that supervises a large number of MicroTCA cards, supporting redundancy and dynamic configuration.
- Initiated, designed and implemented from scratch in Python a fully working domain-less High-Availability software suit that enables "5-Nines" uptime. Currently running in several major cable MSOs in the US.
- Developed a routing daemon in Bash.
- Adaptation of the Pythonic SCons build system to support multiple products built from the same branch.
- Development of a Ruby based tool that converts data from a textual tabular format to any other format, utilizing the ERB.

### **[2006 - 2007] Senior Software Engineer at Zoran Microelectronics**

- Developed software for a SoC based on ARM9 core over ThreadX OS.

- Designed and implemented an extremely modular zero-copy protocol stack for Mobile Digital Television (MDTV) conforming of DVB-H, T-DMB and DAB-IP standards.
  - Layers included: UDP/IP, MPEG2, FLUTE, MPEG4SL, RTP and MSB.
- Programmed hardware drivers.
- Worked with DMA, SPI, etc.
- I was in charge of deployment of the MDTV solution in 3GSM at Barcelona.

## **[1995 - 2006] Senior Software Engineer at Elbit Systems, Elron Telesoft and NCC**

(Started at 1995 as a soldier programmer part of a big communications project at NCC, which was acquired by Elron and then Elbit)

- Worked on a large S&F communication system (50 man-years development time). I was the owner of the following modules, coded in C and C++:
  - Custom RT transport layer intended to be used over tactical mediums (low-bandwidth HF/VHF/UHF radios and other Radio-Telephony mediums);
  - Development of Network Layer protocols for auto-discovery of neighbor nodes;
  - Design and implementation of an automatic distributed directory services for the entire network;
  - Responsible for cross-platform software infrastructure (over Unix AIX and Windows) modules including Shared Memory and logging;
  - Built special simulations to enable system testings.
- Worked on another large S&F communication system ("next-gen" of the previous one) rewritten from scratch in C++:
  - Designed and developed extremely modular transport layer designed to be easily adapter to several rough mediums by user configuration;
  - Designed and developed a logging system that can be filtered by using user-coded expressions;
- Worked on an RT communications controller for tactical mediums over Windows and VxWorks:
  - Controller implemented several MAC protocols including CSMA, TDMA, MS-TDMA and more;
  - Development of both Data Link/MAC and Network layers;
  - Design and development for ALE Link control establishment MAC layer.
- Sole owner, designer and implementor of a light-weight transport layer for small-scale tactical radio networks written in C++. Work involved:
  - Development of custom transport layer communication protocols designed to optimally utilized the given low-bandwidth medium;
  - Application interface;
  - Interfacing low level communication controller;
  - Automatic nodes detection;
  - Designed and developed a distributed automatic radio-slots allocation algorithm.
- Initiation, design and development of an application simulator based on a custom made language:
  - Said language designed for easy learning-curve;
  - Development of full-fledged Visual-Studio-like IDE;
  - Support of easily written external plugins writer either in Native C or in .NET technologies;
  - Plugins can be run over remote machines using various communications medium;
  - Remote debugging support;
  - Complex synchronization support (cross-machines synchronization facilities such as barriers, semaphores, events etc...).

- Worked on an Internet project combining COM and ASP technologies.

## Private Projects

On my spare time I like to build stuff, usually using microcontrollers. Some of the followings are described on my [site](#):

- Wireless remote controlled (cellular and web to RF gateway) alarm clock teddy-bear. Used to wake people who are not responsible enough to set their own alarm clock :)
- Automatic startup of electronic parking meter using a cooking clock
- 3D Lunar Lander, see <http://www.youtube.com/watch?v=eX4jCzC69sM>
- "Digital n-Sided Dice" using a solid-state accelerometer
- Dokuwiki Flickr-like annotated images plugin
- Wii Nunchuck controlled back massager
- and more

## Education

- [1995] IDF "MAMRAM" Programming Course; Various military courses thereafter
- [2000 - 2006] B.Sc. in Physics and Biology - done in parallel of working at Elbit;
  - Final project: development of a novel method to characterize a specific particle in a cell cytoplasm. Project involved use of methods in Information Theory, Physics and CS. Done using Matlab.
- [2009] Team Leaders course at Imagine Communications

## Activities

- Ham Radio Operator, Callsign 4Z5TX
- Electronics hobbyist and enthusiast:
  - Development over various microcontrollers such as AVRs, MCS51s and PICs;
  - Design and build the circuits by myself.
- Woodworking hobbyist