**CV**

**Name:** Adi Barzilay

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**Education:**

2002-2005: First degree in SW engineering at SCE (Sami Shamoon college), final average: 94 (results sheet will be delivered upon request).

**Work Experience:**

2020 – Present: Consultant/Contractor:

* RT/Embedded systems
* Multi-core/processor systems
* Embedded Linux – device drivers, Linux kernel internals, BSP
* Multiple HW architectures and platforms
* Bring-ups and integration of new SoCs
* Multi-thread/process environment – IPC (Inter Process Communication), synchronization, asynchronous procedures
* Performance optimizations

2005 - 2019: Senior RT/Embedded SW engineer and technical leader at Elmo Motion Control (Control & Robotics Solutions).

14 years of experience as RT/EMBEDDED engineer in the motion control and robotics field.

In depth knowledge and extensive experience in the following areas:

* C, C++, ASSEMBLY programming
* Low level programming: HW drivers, BSP, OS internals/infrastructure
* Embedded Linux - device drivers' development
* Embedded Linux kernel internals
* Understanding of modern CPU design
* Multi-core SoCs – SMP, AMP - Inter Processor Communication
* Multiple HW architectures and instruction sets: ARM, POWERPC
* TI/FREESCALE SoCs/processors: IMX6 – Cortex A9, AM5728 (Sitara) – Cortex A15, Cortex M4, MPC8313 - e300, P2020 - e500
* Definition, design and implementation of complex FW modules for real time system
* Multi-disciplinary heterogeneous & homogeneous system - design and development
* Debugging complicated system wide BUGs
* Bare-metal low level microprocessor FW development for real time system
* Boot-loader development
* Deep technical understanding of real time system development methodologies for RTOS or bare-metal
* Inter-process/processor communication and other real time operating system concepts and debugging methodologies
* Performance optimizations
* Excellent debugging skills, both in code and the surrounding hardware
* Bring-ups and integration of new SoCs and FWs
* Leading SW-HW integrations
* Design and implementation of next generation products
* Multi-thread/process environment development
* OOD, OOP methodologies
* **Network & Communication:**
	+ Network stacks
	+ Network processors
	+ Network protocols
	+ L2/L3/L4 layer
	+ Fast packet processing methodologies:
		- Zero-copy
		- Scatter-Gather transactions
		- Optimal copy procedures
		- Cache optimizations
		- Poll vs. Interrupt model, mixed model (e.g. NAPI)
		- RX processing - pipeline/deferring model, packet processing distribution between several processes/processors
		- Bus reservation for real-time communication
		- RX/TX communication prioritization
		- Data structures: Producer/s & Consumer/s model, shared-memory, minimal contention synchronization, lock-free-algorithms, architecture's atomic mechanisms
		- Memory allocation/de-allocation: Memory pools and per-CPU caches
	+ Classification (i.e. real-time vs. non real-time communication), redundancy, time-based synchronization, bridging, socket programming
	+ Communication protocols: TCP, IP, UDP, Ethernet, Ethercat, CAN, RS232, RS485, USB, I2C, PCIe
* Real time virtualization
* Excellent self-management and time management skills, great interpersonal relations, ability to work independently and/or as part of a team in a dynamic environment
* True autodidact that can deep dive into new domains
* Very independent, self-driven and execution oriented with the ability to focus on the right priorities
* Languages: Hebrew, English – fluent
* Excellence awards – department level
* Recommendations will be delivered upon request

**Management**:

* Technical leader at the product level, leading several R&D teams during 10 years
* Vast experience in leading and managing complex infrastructure projects
* Team leader during 4 years
* Management and execution of several bring-up projects
* Subcontractors management

**Projects:**

* GMAS/PMAS – Multi-axis motion controller which has the ability to manage and synchronize multiple motion/IO/sensor devices in real-time. The controller has vast IO and communication interfaces. Responsibilities:
	+ Leading the low-level design and development at the product: boot-loader, kernel modules, peripheral drivers, RT communication between the master controller and the slave devices
	+ Responsibility is from the bit level up to the system level
	+ Constant improvement of determinism, performance, stability and scalability
	+ Technical leading of several R&D teams at the product level
	+ Leading complicated debug sessions of challenging BUGs
	+ Investigation of new technologies for assimilation in the product – considering risk and effort
	+ Leading next generation product – design/development
	+ Leading big SW/HW integrations
	+ Working close to QA and HW teams
* LUZII – Development of solar energy production system.
	+ Development of gateway which receives commands from control device via two LAN channels, processes and forwards them, via four RS485 ports to heliostats. Each heliostat is a mirror which is controlled via motion control device, which controls the angle of the mirror in respect to the sun.
	+ Firmware development in each heliostat.
	+ Download Firmware development for each heliostat, in three levels: inside the heliostat, inside the gateway and inside the COM component.
* CORINDUS – remote catheterization system. Embedded medical system, which contains host communicating with three motion control devices for producing accurate motion sequences via complex mechanical structure. Development in two levels: inside the host and inside the motion control device.
* RAFAEL – Development and maintenance of control system which communicates with HW system that includes motion control devices, HW peripherals: absolute encoders, and various sensors.