Zigmārs Rupenheits

Curriculum Vitae

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Career Objectives

Electronics and math enthusiast seeking to deepen & apply knowledge of control theory, signal analysis, physics, mathematics in practice by designing state-of-the-art electronic devices. Doing it in a systematic & structured manner.

Work experience

2012-present	**Leader/teacher of Robotics Club**, *Riga State Gymnasium No. 1.* Teaching basics of electronics & programming and designing DIY mini-sumo robots
2014-2015	**Electronics engineer**, *Institute of Atomic Physics & Spectroscopy.* Hardware and firmware design and support of electro-optical devices designed for biomedical measurements
2014-2016	**Laboratory technician**, *Faculty of Physics & Mathematics, Nanoelectronics group.* Modelling and analysis of nonequilibrium quantum statistics of nanoelectronic devices

Education

2016-2018	**M.S. in Theoretical Computer Science**, *University of Latvia.* **Subjects studied**: Design and analysis of fast algorithms, Number theory, Combinatorics, Graph theory, Probabilistic algorithms, Algorithm complexity, Mathematical methods of cryptography, Quantum computers, Deep machine learning, Digital design (FPGA programming). **Thesis (in Quantum computation)**: *Exact quantum query algorithms using single-quantum-query subroutines*
2012-2015	**B.S. in Physics**, *University of Latvia.* **Subjects studied**: Classical mechanics, Electromagnestism, Optics, Electronics, Quantum physics, Linear algebra, Numerical methods, Calculus, Differential equations, Tensor calculus **Thesis (in Quantum mechanics)**: *Modelling of nonstationary dynamics of electron wavepacket*

Technical Skillset

Electronics	Knowledge and experience of basic **FPGA programming** in **Verilog**
	Experience doing programming for **Atmel**, **STM32** microcontrollers (both in C/C++ and Assembly)
	Good knowledge of real passive component intrinsic properties and their effect on design
	Good knowledge in discrete component selection for a design

	Ability to quickly understand crucial IC datasheet details
	Ability to effectively **use test equipment** to setup experiments for design verification or characterization
	Proficiency in **Eagle CAD** (for schematic capture & **PCB design**)
	Good understanding of **thermal design**
Programming	C/C++, Java, Haskell, Python, Scala, PHP, Verilog, ARM Assembly
	Experience doing Android app programming & basic iOS app programming
	Solid knowledge in using MS Office and LaTeX
	Experience doing **3D modeling** in **SolidWorks** & printing with 3D printers
Communnication	
Languages	Latvian – native
	English – advanced (level C1)
	German – elementary (level A1)

Electronic/embedded projects

CCD-line sensor reading prototype using ATMEGA328P

Tone synthesizer and sequencer on STM32L476

Motor control board implementing FOC (field oriented control) of a 3-phase PMSM (permanent magnet synchronous motor). Still an ongoing project

E-ink display driver board

Personal projects

Well designed lab power supply (*PSL-3604*) build

GPSDO setup for calibrating OCXOs

Miniature (battery powered) 8x8 LED matrix badge

2-wheel balancing robot

Ultra-Micron dosimeter build

Card game *SET* for Android

Hobbies and other interests

Reading about analog circuit design techniques

Repairing electronic test equipment

Taking electronic test equipment apart and reverse engineering it

Solving math, algorithmic & physics problems

Listening to jazz, classical and funk music

Playing acoustic music