

Miroslav Vitkov

Curriculum Vitae

TECHNICAL SKILLS

- MAJOR
- * **C++14** under procedural, object oriented or functional paradigm
 - * **C11** for μ C or ARM applications
 - * tools such as git, gitolite, cmake, teamcity, valgrind, clang-tidy, objdump
- MINOR
- * **python**
 - * **bash**, the LFHS, standard utilities, security basics, UNIX sockets
 - * **TEX**
 - * basic electrical engineering - read a schematic, reason about it, use an oscilloscope, design a filter
 - * **SQL**
 - * ML - cross validation, ensembles, dataframes, measures of correctness, Markov processes, SVM
- MISC
- * **Haskell** - below junior level
 - * **regex** - for capture groups
 - * Autodesk **Inventor** - design a simple gearbox and simulate it
 - * **MatLab** - programming, SimuLink modeling
 - * **R** - for ggplot2
 - * **avr-asm**
 - * control theory - s-, z-transform, stability, pole placement, system identification
 - * red team - nmap, john, aircrack-ng
 - * blue team - apache, ufw, rkhunter, tcpdump

COMMUNICATION SKILLS

- BULGARIAN C2: Native speaker
- ENGLISH C2: Fluent (Cambridge CPE)
- GERMAN A1: Basic

✱ Aug 1988
✍ Sofia, Bulgaria
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EDUCATION

- 2017 – 2019 **Machine Learning Scientist - dropped**
COGNITIVE SYSTEMS: LANGUAGE, LEARNING AND REASONING
University of Potsdam, Germany
- 2007 – 2016 **Industrial Engineer**
BACHELOR THESIS:
MULTITASKING AUTOTUNING PID CONTROLLER IN HEAT TRANSFER APPLICATION
Technical University of Sofia
- 2008 – 2010 **Physicist - dropped**
Sofia University Kliment Ohridski
- 2003 – 2007 **Communications technician**
HIGH SCHOOL DIPLOMA
Technical School of Communications, Sofia

PROJECTS ON GITHUB

C++	face <i>Use OpenCV Haar cascades to identify persons.</i>
C++	rocks <i>Multiclass classification. Uses dlib.</i>
C++	silhouette <i>Human silhouette extraction using HOG descriptor, SVM classifier and adaptive background thresholding.</i>
C	micli <i>Micro CLimate controller, an autotuning PID regulator.</i>
C	megaboot <i>Simple atmega168 bootloader.</i>
C	cgetset <i>Generate getter/setter methods. Self-contained.</i>
PYTHON	rat <i>Encrypted chat infrastructure.</i>
PYTHON	rtplot <i>Realtime temperature plotting utility.</i>
PYTHON	gender <i>Guess the gender of the author of a short paragraph.</i>
BASH	scripts <i>Utilities for everyday use.</i>
HASKELL	voiceid <i>Identify different persons via speech.</i>
LATEX	rpg <i>A role-playing game.</i>
INVENTOR	gearbox <i>Gearbox calculation and technical drawings.</i>
SELENIUM	sms <i>Website scraper.</i>

WORK EXPERIENCE

Total hired experience: exactly 6 years.

JUL 2022 - NOW

Independent Software Developer

Networking

Developed and maintained an encrypted messaging application using Python, ffmpeg, and systemd supervision. Designed a public-facing web interface to expose project documentation, requiring robust security measures.

APR 2022 - JUL 2022

Allterco

Embedded

- Maintain code running in soft realtime in a custom OS.

- Develop BLE on ARM, which involves oscilloscope, logic analyzer, generated code, LED debugging.

FEB 2020 - JUL 2020

Smule

C++ Android algorithms

- Revive a legacy codebase (2000 line functions, zero documentation, no authors) but of significant business and engineering importance.

- Segment words from audio stream.

- Remain productive despite endless meetings.

- Write simple tools in python to parse logs and source code.

- Investigate crashes on Android devices.

JAN 2016 - SEP 2017

Euro Games Technology

C++ embedded Linux

- Maintain the layer just below Business Logic. Essentially encapsulate SDL2, OpenGL, Linux files, IPC, devices and network as to provide an API to internal clients.

- Bill accepting device user-space driver implementation from scratch.

- Script gitolite hooks and communicate their purpose to the other teams.

- Deliver a several months long project with minimal supervision.

- Animate custom fonts, draw values based on network updates.

MAY 2013 - MAR 2015

Antelope Audio

C++ ARM bare metal

- Implement a reverb in C++ on bare metal ARM.
- Design a GUI communicating with the device using pyQt.
- Implement dynamic bi-quad filter coefficient update as to respond to the user turning a knob.
- The filter representations in z-domain are combined to yield a frequency response graph.
- Develop USB2 Audio mode firmware for bare metal ARM.
- JTAG-and-scope debugging.
- Collaborate closely with teams of vastly different skill sets - HW engineers, audio engineers, visual artists.

FEB 2013 - MAY 2013

Johnson Controls

C embedded

Boolean algebra, concurrency, unit tests and documentation.

AUG 2011 - JAN 2013

MM Solutions

C++ Android algorithms

Digital video stabilization for the Android camera. By anchoring the feedback loop to the on-board gyroscope instead of to image features we achieved unparalleled real-time performance.