



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** for ML applications
 - * **bash**, the LFHS, standard utilities, security configuration and evaluation, UNIX sockets
 - * **TEX**
 - * basic electrical engineering - read a schematic, reason about it, use an oscilloscope, design a filter
- 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**

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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

COMMUNICATION SKILLS

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

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>

WORK EXPERIENCE

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.
- 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.

FEB 2013 - MAY 2013

Johnson Controls

C embedded

Boolean algebra, concurrency, unit tests and documentation.

AUG 2011 - JAN 2013

MM Solutions

C++ Android algorithms

Developed and implemented image stabilization for Android videos. The use of the on-board gyroscope in the feedback loop was novel at the time, allowing unparalleled performance in real-time video capture. Additionally SIFT features were used for training and for drift correction. All rotations were expressed in quaternions.