

## PERSONAL INFORMATION

## Anatoly Besplemenov

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 Google Hangouts Anatoliy Besplemenov

## WORK EXPERIENCE

01/01/2015–Present

**Engineer & Inventor**

Quant enterprise and Self-Employed, Vladikavkaz (Russia)

- making an Android Wear apk for real time car data reading/displaying (Pulta the OBDII Watchface)

- research & development work for the Bottle Plotter: mechanics, electronics, software (embedded for Atmel MCU and the Python extension for Inkscape graphic editor)

- ordering and buying all needed components

- making 11 plotters for testing

- preparing the plotter for mass production

In 2017:

- learning and programming OpenGLS2.0 3D graphics for Android Wear and Data presentation for SCADA in 3D

- writing tools for OpenGLS2.0 Data Arrays creation

- learning MRE SDK 3.0, Mediatek LinkIt IDE for IoT and programming phones (Vphone S8 based on Mediatek's MT2502 SoC)

01/06/2012–31/12/2015

**Head of Information Protection Group**

Smart City Vladikavkaz, Vladikavkaz (Russia)

- organize work for information protection

- developing packets of documentation corresponding the federal laws

- participation in forums and meetups on federal level for defining strategies in the information security sphere

01/01/2011–30/05/2014

**Embedded engineer**

Self-employed, Vladikavkaz (Russia)

- learning ARM processors ARM9 and ARM Cortex-A8

- studying no-OS bare metal programming

- making the StartOS operating system

- connecting hardware periphery (sensors) via various protocols

02/12/2001–31/12/2010

**CEO**

Quant (afterwards renamed into Euromach), Vladikavkaz (Russia)

- personnel management (up to 45 employers)

- attracting clients, buyers, suppliers

- production promotion, sales, service, maintenance

- providing all the equipment working

- developing hardware & software for computers, micro controllers, CNC routers  
website: [www.euromach.ru](http://www.euromach.ru)

Related document(s): TheResume.pdf

17/03/1989–30/06/2002

### Senior Engineer

Informatics and Analytics Department of Government of Republic RSO-Alania, Vladikavkaz (Russia)

- maintenance the computers, data bases, networks
- hardware and software development
- information protection
- learning personnel

01/10/1983–17/03/1989

### Senior Engineer, Chief of the CAD Bureau

Scientific Research Institute of Electronic materials (NIIEM), Vladikavkaz (Russia)

- maintenance of computers, measuring devices
- projecting automatization systems (SCADA) for technological lines
- developing sensors and executive mechanisms
- exploiting the CAD systems
- developing programs for scientific modelling/calculations

## EDUCATION AND TRAINING

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01/06/1985–20/07/1985

### Computer service/developer engineer

Studying Producing Combine, Donetsk (Ukraine)

- computer engineering
- PDP-11 hardware & software
- Assembler for PDP-11

01/09/1977–30/06/1982

### Electrical Engineer in Field of Industrial Automation

EQF level 6

North Caucasian Institute of Mining and Metallurgy (State Technical University), Vladikavkaz (Russia)

- Mathematics
- Programming languages
- Analog Computers
- Algorithms
- Digital Computers
- Technical Drawing
- Theoretical Mechanics
- Theoretical Bases (fundamentals) of electro-techniques
- Electric Machines and Apparatus
- Industrial Electronics
- Physics
- Automation theory

## PERSONAL SKILLS

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Mother tongue(s)

Russian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B1	B1	B2	B2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user  
 Common European Framework of Reference for Languages

**Communication skills** - make good contact and kind relations with almost all kind of people

**Organisational / managerial skills** - good team leading skills gained as CEO of "Quant" enterprise (about 45 people)  
 - organisational skills gained as Chief of the CAD group

**Job-related skills**

**Computer platforms:**

- IBM PC AT, Intel x86, Atmel AVR micro controllers, Palm Handheld (Motorola MC68328), ARM9, ARM Cortex-A8, Android phones, tablets, smart watches.
- Linux – only tried to compile sources for getting Images for FriendlyARM mini2440 boards.
- uC/OS RTOS from Micrium.
- Nucleus RTOS by Embedded Software Division of Mentor Graphics.

**Programming Languages:**

-Assembler for Intel, Motorola, Atmel AVR, (ARM on demand), C, Java for Android, PHP, HTML, (Python, Perl on demand), Wiring (Arduino, Processing IDE).

- can write programs which are independent of the operating system for IBM PC (Intel x86) and ARM. They work with Graphics, Sound, Networks and other external devices.

- can make self-modifying and data-driven programs on low level (machine codes)

**Computer Graphics:**

- Open GLES2.0 for Android

**CAD/CAM:**

- EZ-CAM, Art-CAM, K-CAM, Rhinoceros 3D

**Engineer electrician**

- certified for working with industrial power electric hardware up to 1000 Volts

**Electronics**

- developing electronic schematics, devices, working prototypes, small quantity production of PCB with ICs, MCUs, solid state lasers, discrete elements

**Mechanics**

- projecting mechanical apparatus and machine parts

- making technical plans/drawings both in 2D and 3D
- producing CNC programs and executing them on CNC routers
- calculating G-code for CNC in real time and output it onto milling machines

**Physics/Mathematics/Automation**

- strong understanding and implementing of physical processes in real World, transferring them into mathematical models for further processing and making devices with behavior based on them

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Independent user	Proficient user	Proficient user	Proficient user	Proficient user

Digital competences - Self-assessment grid

**Programming IDEs:**

- ADS1.2 - Metrowerks CodeWarrior for ARM Developer Suite v1.2.
- EmBitz IDE for ARM
- ARM Keil RealView uVision.
- Android Studio
- MRE SDK V3.0.00 for MeadiaTek
- LinkIt Development Platform for IoT
- Eclipse for Android
- Atmel AVR Studio
- IAR

**Software:**

- CorelDraw – for simple 2D graphics.
- Rhinoceros 3D – 3D modeling for CNC, design 3D shapes and project visualization.
- SIM Card ToolKit
- EZ CAM
- Programs for electronics schematics creation (several)
- Programs for PCB producing (drawing and making on CNC)

ADDITIONAL INFORMATION

Certifications

**Invention:**

The Laser Printer with Direct method for labels and packing.  
 Russian Patent #2475363 <http://www.findpatent.ru/patent/247/2475363.html>

Publications

"Mechanical Scanning Running String" on Atmel AVR in "Radio" magazine, Russia, 2009, February issue.  
 "Encoder Based on Optical Sensor from Computer Mouse" EDN UBM, April, 2015.

ANNEXES

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- TheResume.pdf
- ANATOLY BESPLEMENOV PROJECTS.pdf

TheResume.pdf 

## ANATOLY BESPLEMENOV

VLADIKAVKAZ, NORTH OSSETIA-ALANIA, RUSSIAN FEDERATION  
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[WWW.PHYSICALCOMPUTING.RU](http://WWW.PHYSICALCOMPUTING.RU)

**Education****1977-1982**

North Caucasian Institute of Mining and Metallurgy (State Technical University), Electro-Mechanical faculty.

**Specialty:** Electric Drivers and Automation of technological processes

**Qualification:** Engineer-electrician

**Disciplines:**

Mathematics	Programming languages
Analog Computers	Algorithms
Digital Computers	Technical Drawing
Theoretical Mechanics	Theoretical Bases (fundamentals) of electro-techniques
Electric Machines and Apparatus	Industrial Electronics
Physics	Automation

**Awards**

1978 2-nd place in Institute Mathematic Olympiad

**Work Experience****1983-1989**

An Engineer of the Scientific Research Institute of Electronic materials (NIIEM).

I was working at the Automatic Systems Laboratory intended for controlling technological processes.

My projects were: computer (microprocessor) systems for data acquisition from connected sensors including temperature, pressure, voltage, thickness meter and displaying the data on the screen. Automation systems were applied to the whole producing line's technological process for wide thin polymer film. Also, the software and some self-developed hardware (Analog-to-Digital and Digital-to-Analog Converters and GPIO PCBs) had the ability to pronounce speech messages addressed to the service personnel if measured parameters values exceeded their limits.

Then I've made the Speech Synthesizer based on parsing text and phonemes compilation. In 1990 **The First Programmer's Contest** of the USSR was organized and I have become the Laureate (among top 10 places).

In 1988 I began to work as Chief of CAD Bureau (NIIEM).

We had micro and mini computers: DEC PDP-11, LSI-11, DEC Professional, VAX-11/70. I programmed that stuff using the Assembler language. Also, Kulon-1, the CAD system with a plotter and 2 graphics terminals ("Electronica-100/25, DEC analog).

**1989-2001**

I worked as an engineer in IT sphere in one of the State organization of Republic Ossetia.

My job responsibilities were: maintenance the computers, data bases, networks and information protection.

During those time I've learned the IBM PC based computers very well. Have learned to write programs independent of operation systems (bare metal). All devices: the video adapter, drives, keyboard, parallel and serial ports, net cards and sound cards were programmed. A lot of DIY libraries were created. It's important skill for building the custom embedded solutions.

In 1988 I've created Supervisory Control and Data Acquisition (SCADA) System in the large "Istok" enterprise, on Sparkle Vines factory, in champagne-fermenting section. This project included development of hardware and mainly writing control program. Parameters (60 – measured physically, 60 – chemical and inputted manually by operator) were displayed on the large screen, written to a hard disk and also transferred via the network to the operator's room. Additionally, as watching on the screen all day long analyzing values was hard to human eyes, the program produced voice messages via loudspeaker. The main kernel of program occupied as little as 8000 bytes in memory. Graphic subsystem was made by means of PCX-Utilities and was called from the main program body as overlay.

### **2001-2010**

Director (CEO) of "Quant" enterprise (from 2002 – co-owner)

In 2001 I learned Palm OS Programming, Assembler "Pila" for 32-bit Motorola 68000 series processor (its Dragonball). I could easily and freely get access to input-output ports and have a deal with digital signals, graphics and so on.

In 2002 Year I've studied CNC programming. I applied the EZ-EDM CAM system onto 5 milling machines with numeric control in our factory.

In 2008 we've bought 4-axis milling machine, I've wrote a program for manufacturing the auger screws with volatile thread step performing calculations of G-codes for CNC system in real time. A traditional approach to this task using Auto CAD or similar software was too complex considering the hard 3D modeling and having a deal with tens of thousands floating point X,Y, Z and A coordinates.

I started applying the Atmel AVR micro-controllers in 2006. Based on this ICs stuff I've developed hardware and software for the applicator for self-adhesive labels with acceleration at the start and deceleration at end of step motor movement.

Were implemented sensors: optical, inductive, capacitive, etc. Self-projected/manufactured encoder for the applicator was my own construction based on the optical mouse DSP chip.

### **SKILLS:**

#### **Computer platforms:**

IBM PC AT, Intel x86, Atmel AVR micro controllers, Palm Handheld (Motorola), ARM9, ARM Cortex-A8, Android phones, tablets, smart watches.

Linux – I only tried to compile sources to get Images for FriendlyARM boards.

uC/OS RTOS from Micrium.

Nucleus RTOS by Embedded Software Division of Mentor Graphics.

#### **Programming Languages:**

Assembler for Intel, Motorola, Atmel AVR, (ARM on demand). C, Java for Android (using Processing – for Windows, Mac OS), JS, PHP, HTML, (Phyton, Perl on demand). Wiring (as for Arduino IDE).

I can write programs which are independent of the operating system (bare metal) for IBM PC and ARM. They work with Graphic, Sound, Networks and other external devices.

**Computer Graphics:**

Open GLES2.0 for Android

**CAD/CAM:**

EZ-CAM, Art-CAM, K-CAM.

**Programming IDEs:**

ADS1.2 - Metrowerks CodeWarrior for ARM Developer Suite v1.2.

EmBitz IDE for ARM

ARM Keil RealView uVision.

Android Studio

MRE SDK V3.0.00 for MeadiaTek

LinkIt Development Platform for IoT

Eclipse for Android

Atmel AVR Studio

IAR

**Tools:**

CorelDraw – for simple 2D graphics.

Rhinoceros 3D – 3D modeling for CNC, design 3D shapes and project visualization.

SIM Card ToolKit

Etc.

**Circuits and PCB**

ABACOM sPlan – for electronic shemas routing.

ABACOM Sprint Layout – for PCB creation.

**Measurements**

Oscilloscopes, signal generators, IC programmers, testers.

In 2011 I began to work with ARM9 generation systems-on-chip (SoC). I got my first Samsung (FriendlyARM Mini-2440) Development Board based on Samsung S3C2440A, in two months have made no-OS application for step motor control – it was the demo program for one firm. Here is the video:

<http://www.youtube.com/watch?v=DTvWTj6NwBg>

In July I was finished small OS STARTOS (for FriendlyARM). It loads programs from SD card into the memory (RAM) and gives the end users an API using software interrupts (SWIs or SVCs). Almost all programming work was done implementing the C language in ARM Developer Suit by MetroWerks. Functions include text, graphics, sounds, PWM, GPIO, TCP/IP stack for Client/Server realization, etc. The video:

[http://www.youtube.com/watch?v=Q2mjBy\\_Yor4](http://www.youtube.com/watch?v=Q2mjBy_Yor4)

The Project is placed at: <http://code.google.com/p/startos>. The program is widely illustrated with learning examples in ADS1.2, Keil, IAR written using the C and Assembler.

The small OS also may be ported to STM32 platform and LPC2148 as well.

The OS gets ready in just about 1 second after power on and has the footprint less than 40 k bytes.

Later, it was transferred onto the **ARM Cortex-A8** processor Samsung S5PV210s, the Samsung's development board SBC-210 (or FriendlyARM Mini-210s)



**Android**

I can write applications with sound, graphics (2D and 3D OpenGLS2.0), Intel Open CV (computer vision), working with embedded (on board) or external hardware sensors.

For instance, please take a look at: Pulta the OBDII watch face application on Google Play. It links a car and a watch via Bluetooth, retrieves and displays the real-time data right on your wrist.

**Inventions**

The Laser Printer with Direct method for labels and packing.

Russian Patent #2475363 <http://www.findpatent.ru/patent/247/2475363.html>

Publications include the “Mechanical scanning running string” on Atmel AVR in “Radio” magazine, Russia, 2009, February issue. “Encoder based on optical sensor from computer mouse” EDN UBM, April, 2015.

One of last small projects – the Bottle Plotter.

It draws vector pictures on the bottles from the InkScape graphic editor. (Transfers SVG to G-codes and sends them via USB-UART adapter or Bluetooth module HC-06).

Video is [here](#)

**Future Plans** – became a professional in ARM Assembler, Android programming, building IoT devices, developing and applying OS, standalone applications and Automation projects. And, of course, far-away dream goal - learning and applying the Genetic Algorithms for program’s self-development.

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# ANATOLY BESPLEMENNOV PROJECTS.pdf

## ANATOLY BESPLEMENNOV

VLADIKAVKAZ, NORTH OSSETIA-ALANIA, RUSSIAN FEDERATION  
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## PROJECTS LIST

### 2015-2017 - Self-Employed Engineer:

**Bottle Plotter** - it draws vector pictures on the bottles from the InkScape graphic editor. (Transfers SVG to G-codes and sends them via USB-UART adapter or Bluetooth module HC-06). Video is [here](#).

**Pulta the OBDII watch face** application on Google Play. It links a car and a watch via Bluetooth, retrieves and displays the real-time data right on your wrist. [App link](#)

**OS STARTOS** (for Samsung and FriendlyARM development boards). Loads programs from SD card into the memory (RAM) and gives the end users an API using software interrupts (SWIs or SVCs). Almost all programming work was done implementing the C language in ARM Developer Suite by MetroWerks. Functions include text, graphics, sounds, PWM, GPIO, TCP/IP stack for Client/Server realization, etc. The small OS also may be ported to other platforms as well.

The OS gets ready in just about 1 second after power on and has the footprint less than 40 k bytes.

[Demo Video: http://www.youtube.com/watch?v=Q2mjBy\\_Yor4](http://www.youtube.com/watch?v=Q2mjBy_Yor4)

The Project is placed at: <http://code.google.com/p/startos>. It is widely illustrated with learning examples in ADS1.2, Keil, IAR written using the C and Assembler.

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### 2007 - 2009

#### Applicator for Self-Adhesive Labels

For product labeling with self adhesive labels. Product may be packs, bottles, etc.

Characteristics:

- Product/label speed - up to 30 meters/minute
- Label's height - up to 200 mm
- Accuracy - 0.5 mm

The product must be moving on conveyor or carousel of labeling machine.

It can work with or without an encoder is implemented for synchronization.

The last case is applicable when the label is short.

The product sensor may be optical (IR or visible light) w/ or w/o the cataphote.

The label sensor may be optical, inductive or ultrasound.

The encoder – optical (standard) or made from the computer mouse sensor.

Schematics is based on Atmel AVR MCU. It provides smooth step motor speed acceleration/deceleration additionally to all other real-time work.

[full description here](#)

### 1998

**Supervisory Control and Data Acquisition (SCADA) System** in the large “Istok” enterprise, on Sparkle Vines factory, in champagne-fermenting section. This project included development of hardware and mainly writing control program. Parameters (60 – measured physically, 60 – chemical and inputted manually by operator) were displayed on the large screen, written to a hard disk and also

transferred via the network to the operator's room. Additionally, as watching on the screen all day long analyzing values was hard to human eyes, the program produced voice messages via loudspeaker. The main kernel of program occupied as little as 8000 bytes in memory. Graphic subsystem was made by means of PCX-Utilities and was called from the main program body as overlay.

**1983-1989 - Engineer of the Scientific Research Institute of Electronic Materials (NIEM):**

**Computer (microprocessor) systems for data acquisition from connected sensors including temperature, pressure, voltage, thickness meter and displaying the data on the screen.** Automation systems were applied to the whole producing line's technological process for wide thin polymer film. Also, the software and some self-developed hardware (Analog-to-Digital and Digital-to-Analog Converters and GPIO PCBs) had the ability to pronounce speech messages addressed to the service personnel if measured parameters values exceeded their limits.

**Speech Synthesizer** based on parsing text and phonemes compilation. In 1990 **The First Programmer's Contest** of the USSR was organized and I have become the Laureate (among top 10 places).