

Andreas Alexopoulos

Software engineer, Data scientist

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EDUCATION

PhD in Computer Science

University of Thessaly, Lamia

Thesis: "Real time beam profile measurements with the Beam Gas Vertex Monitor"

Diploma (MSc) in Computer & Communication Engineering

Thesis: "Cryogenic Semiconductor Detectors: Simulation of Signal Formation & Irradiation Beam Test"

ECTS obtained: 300

Final Grade: 7.32/10

TECHNICAL SKILLS

LANGUAGES

Python
C/C++, R, Matlab/Octave, Bash
HTML/CSS, Javascript
Java, MIPS Assembly

FRAMEWORKS & LIBRARIES

Qt, Numpy, Scipy, Pandas, PyTables, ROOT
Hadoop, Spark, Boost
GSL, OpenCV, OpenGL
Vue.js, Jekyll

TOOLS

Git, SVN, Atlassian stack, Wireshark, Valgrind suite, Docker

PROTOCOLS

TCP/IP, UDP, SSH, USB, GPIB, VMEbus

OPERATING SYSTEMS & IDEs

Linux (10+yr), Windows
Visual Studio Code, Eclipse, JetBrains IDEs, Atom

PERSONAL SKILLS

LANGUAGES

English Level: Proficient
French Level: Very Good
Spanish Level: Very Good
Greek Native Language

EXPERIENCE

Doctoral Student, CERN

Computing, Detector Physics

Dec 2015-present
Geneva, Switzerland

- Design of real time data acquisition schemes
- Simulation & tracking of beam-gas interactions for beam profile measurements
- Algorithms for real-time data filtering in a CPU farm based high level trigger
- Communication schemes for hardware control and monitoring
- Data analysis, event reconstruction & visualization

Technical Student, CERN

Computing, Detector Physics

Apr 2014-Jun 2015
Geneva, Switzerland

- Simulation of signal formation in semiconductor devices
- Design of a data acquisition system over the network
- Participation in test beams for irradiation tests
- Data analysis & reconstruction of the tests

Intern, Velti Center of Innovation

Software Development

Jul-Aug 2009
Marousi, Greece

- Development of GUIs using Java Swing and Web forms

COURSES & SEMINARS

Machine Learning

Stanford University, Coursera, online course

Apr. 2019

CERN Thematic School of Computing

University of Split, CERN, Mediterranean Institute For Life Sciences

Jun. 2018

Introduction to Apache Hadoop & Spark

CERN Training

Apr. 2017

Joint Universities Accelerators School

Beam Instrumentation Courses

Feb. 2017

CERN Accelerators School

Basics of Accelerator Science and Technology at CERN

Feb. 2017

R Course

Datacamp, online course

Oct. 2016

CERN School of Computing

Vrije Universiteit Brussel, CERN, SCK-CEN Academy
ECTS obtained: 6

Aug. 2016

Python Hands-on Introduction

CERN Training

Sep. 2014

Introduction to Computer Science & Programming

MITx, online course

Feb. 2014

MUSIC SKILLS

Piano Classes (1993-2003)
Guitar Classes (1999-2002)
Music Theory Superior Degree
Grade: (9.7/10)


INTERESTS


Outreach Official CERN Guide
Sports Football, Tennis, Squash, Cycling, Snowboarding
Music Composer & band member

SELECTED PUBLICATIONS

"Noninvasive LHC transverse beam size measurement using inelastic beam-gas interactions", A. Alexopoulos et al. (The BGV Collaboration), Phys. Rev. Accel. Beams 22, 042801 

First LHC transverse beam size measurements with the beam gas vertex detector, A Alexopoulos et al 2017 Journal of Physics: Conference Series, 874 012086 

Development of silicon detectors for Beam Loss Monitoring at HL-LHC, E. Verbitskaya et al 2017 Journal of Instrumentation, Vol.12 C03036 

"CERN-RD39 collaboration activities aimed at cryogenic silicon detector application in High-Luminosity Large Hadron Collider", Z. Li et al, Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Elsevier, 2015 

"Beam Loss Monitors for the Cryogenic LHC Magnets", M. R. Bartosik et al, Proc. Int. Beam Instrumentation Conf. (IBIC15), Melbourne, Australia, 2015 

TALKS

CERN Conference at National Technical University of Athens

Athens, Greece

Presentation Title: "Beam Loss Monitors for the LHC"

Jan. 2018

8th International Particle Accelerators Conference

Copenhagen, Denmark

Presentation Title: "First Transverse Beam Size Measurements with the Beam Gas Vertex Detector"

Oct. 2017

CERN Conference at University of Thessaly

Volos, Greece

Presentation Title: CERN and prospects for the students of the ECE Department

Nov. 2016

SELECTED PROJECTS

"**flask-vue**", a template for single page applications with a Vue.js frontend and a Flask backend built primarily for publishing graphs of analyzed data (Flask, Vue.js, Plotly, SQL) (CERN, 2019).

"**apidpy**", A package for developing model-view-controller (MVC) structured GUIs for data acquisition, analysis & visualization based on Python and PyQt (CERN, 2018).

"**bgv-collector**", A server running on the control node of a CPU farm, collecting the processing results from the nodes and applied the IPC method for the beam size determination. Implemented with C++, Boost and ROOT (CERN, 2018).

"**bgv-display**", A graphical application for interactive 3D visualization, data processing and simulations of events from the Beam Gas Vertex detector (CERN, 2018).

"**srv-pub-ctrl**", A package used to deploy servers/publishers on VME CPUs based on configuration files for hardware control and data publishing (CERN, 2018).

"**bgv-l0**", A graphical client application controlling the L0 trigger VME boards of the Beam Gas Vertex Detector while retrieving and visualizing the data in real time (CERN, 2017).

"**bgv-ipc-sim**", An application simulating the potential of the Impact Parameter Correlation (IPC) method for beam size measurements (CERN, 2016).

"**bledpy**", a graphical client application controlling & acquiring data from the BLEDP stand-alone DAQ system (up to 16MBps) with offline display and data processing functionality used for data acquisition & processing during beam tests (CERN, 2015).

"**circuit-simulation**", a circuit simulation program (SPICE) implemented in C with GSL. It involved the initial definitions of the equations used for linear and non-linear circuits, their DC and AC analysis while also sparse matrices for the simulation of large netlists (UTH, 2013).