

Miroslav Šimko, PhD

Computer vision / Python / C++ developer
Currently based in Japan

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Education **2013–2021, Ph.D.**, Experimental Nuclear and Particle Physics
Czech Technical University in Prague (CTU)
Faculty of Nuclear Sciences and Physical Engineering (FNSPE)
Thesis: Study of Heavy Flavor at the STAR Experiment

2011–2013, M.Sc., Experimental Nuclear and Particle Physics
CTU – FNSPE
Thesis: Design and Optimization of the Optical Readout System
for Electromagnetic Calorimeter FOCAL for the ALICE Experiment

2008–2011, B.Sc., Experimental Nuclear and Particle Physics
CTU – FNSPE
Thesis: Detector Control System for the ALICE Experiment

Experience **2021–present: ioLabs AG: Computer-vision developer**, training
and development of 2D and 3D computer-vision models for engineering projects.
Utilized and trained state-of-the-art models Mask RCNN and Mesh CNN.
Used advanced pruning and quantization techniques. Written in Python,
using the Pytorch framework, deployed as API on Flask.

2019–2020: ioLabs AG: Geometry engine for collision detection, written
in C++ and Python, using Open CASCADE and VTK

2014–2021: Analysis: Reconstruction of the Λ_c baryon at the STAR
experiment Brookhaven National Laboratory (BNL), USA; Collaboration between
Lawrence Berkeley National Laboratory (LBNL), USA, and CTU, Czech Republic;
Analysis, using “big-data” techniques on computing clusters; Code written in C++
and Root, using machine learning from the TMVA package (Boosted-Decision Trees)

2015–2019: STAR Zero-Degree-Calorimeter on-call expert at BNL, USA;
Responsible for control, calibration, maintenance, and upgrades of crucial detector
components; Calibration code written in C++ and Root

2013–2014: LBNL, USA: Simulations for the Pixel sensors
at the STAR experiment; Written in C++ and Root

2012–2013:

2011–2013: Detector-Control-System expert for the Silicon-Drift Detector
for the ALICE experiment, LHC, CERN, Switzerland; Responsible for maintenance
and smooth operation of the detector, written upgrades to the system in PVSS.

Languages and Skills	Czech/Slovak (native), English (fluent), Japanese (intermediate), French (beginner) Statistical analysis, machine learning, programming for computing clusters, Docker, Jenkins, git Programming in C, C++, Python, Root, Pytorch, BASH, PVSS, National Instruments LabView Driver's license B	
Teaching	CTU – FNSPE: Student Physics Laboratory Practice, 2014–2019	
Interests	Physics, informatics, photography, hiking, sport (bicycle, ski, canoeing), reading	
Publications and Conferences	Analysis published in the journal Physical Review Letters Author on more than 95 collaboration papers Presented results at 9 international conferences with 3 proceedings papers	
References	Github page: https://github.com/mirsimko ioLabs AG https://iolabs.ch Jaroslav Bielčík (Current supervisor) Faculty of Nuclear Sciences and Physical Engineering Czech Technical University in Prague jaroslav.bielcik@fjfi.cvut.cz Vojtěch Petráček (Former supervisor) Czech Technical University in Prague University Director vojtech.petracek@fjfi.cvut.cz	Zhangbu Xu (Work on STAR ZDC) Brookhaven National Laboratory STAR Spokesperson xzb@bnl.gov Xin Dong (Supervisor at LBNL) Lawrence Berkeley National Laboratory xdong@lbl.gov