

Poliarnyi Nikolai



Work Experience

- Agisoft

Since April 2016

Mathematician-Programmer (Team Lead)

[Metashape](#) developer. R&D and continuous search for points of improvement. Developed a detailed, scale-diverse, fast and scalable (out-of-core and cluster-friendly) surface model reconstruction method (published [a paper](#) at the top conference [ICCV 2021](#)). Student Internship Mentor.

Computer Vision, Computational Geometry, OpenCL/CUDA/Vulkan, AI/ML

- Transas

October 2014 - March 2016

Mathematician-Programmer

Developed a server that produces 3D landscape reconstruction and true orthophoto stitching from UAVs' data ([presentation](#), [second presentation](#)).

OpenCV, OpenCL, Python, Cython, Ceres-solver.

- Yandex.Money

February 2014 – October 2014: Software Developer (Java backend)

- DevExperts

April 2013 – September 2013: Software Developer (Java backend)

Skills

- **Computer Vision:** Structure from Motion, Multiple View Geometry, AI/ML, objects detection/classification/segmentation, magic. Better than state of the art depth maps estimation, surface reconstruction, texturing and other algorithms.
- **Computational geometry, CGAL:** computations with absolute accuracy, algorithms and structures like Delaunay triangulation.
- **Vulkan, OpenCL, CUDA, OpenGL, WebGL:** GPGPU computations, shaders, ray tracing, algorithms profiling/acceleration/adaptation for the GPU. Able to work around bugs in video drivers and compilers...
- **C++, Python, Java**

Activities

- **Consultant:** provides consultation services to companies and startups on topics related to computer vision algorithms and GPU-acceleration.
- **Photogrammetry course:** developed Photogrammetry [course](#) in Computer Science Club. Teaching it in [SPbU](#). [Video recordings](#). Tasks on [github](#).
- **GPGPU course:** developed GPGPU OpenCL [course](#) in Computer Science Center. [Video recordings](#). Tasks on [github](#).
- **Open-source:** [Out-of-core merge sort](#) with GPU acceleration. [96-bit 3D Morton code](#). OpenCL [implementation](#) of EDISON mean shift. [Implemented](#) Python bindings for OpenCL algorithms in OpenCV. Contributions to OpenCV, PyOpenCL, jupyter qtconsole and others. GPU monitoring in [i3pystatus](#).
- **Hackathons:** six awards on hackatons. Two first places on [X-Mas Hack](#) (mission planner for drone swarm). Third place on [HackCV](#) (traffic signs recognition), [Science Hackday #2](#) (Startup nomination), [Hackday#36](#) (Autodesk 3D-web nomination), [HackEdu](#) by JetBrains (third place). Participation in [Junction 2016, 2017](#).
- **Conferences:** published [a paper](#) on [ICCV 2021](#). [Presented a report](#) on a new algorithm for building Digital Twins of Cities at the [ISPRS Geospatial Week 2023](#). Participated in [3DV 2018](#), [3D-ARCH 2019](#), [ISPRS Congress 2022](#).
- **Magister Ludi:** [PML №239](#) programming teacher.

Education

- Computer Science Center
- ITMO University, Computer Technologies
- PML №239, mathematical circle, programming contests

Contacts

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