PIX4Dengine SDK V2

FEATURE LIST

	Features	Advantages
INTERFACE	**Python language interface for easy integration**	Design your pipelines, scenarios, and validations using the most straightforward industry-standard scripting language
	Simplified access to 3rd party integrations	Integrate 3rd party solutions within processing pipelines
OPERATIONS	**Short processing times**	Get the SLAs of your deliveries under control. Process more data faster within the same amount of time
	Multicore CPU	Increase the processing speed by leveraging the power of all assigned physical cores and hyperthreading
	GPU processing (beta)	Increase the processing speed by leveraging the power of GPU
	HW resource management	Control your hardware resource usage for all major processing steps
	Creative custom pipelines	Feel free to create pipelines for any scenarios
	Custom I/O directories (images, exports, logs, reports, etc.)	Decide on and define locations of all your files with extended non-ASCII character support
	Offline authentication	Ask for our local license server solution for air-gap LAN set up (on request)
INPUTS	**Large data sets 10'000+ images**	Scale up your operations
	Large frame images	Process images with resolutions even over 100Mpx
	Aerial (nadir/oblique) and terrestrial images in .jpg .jpeg .tiff formats	Process RGB images from any aerial, terrestrial, manned, or unmanned platform with EXIF/XMP tags compliant with Pix4D basic specification (perspective and fisheye lens)
	Extended non-ASCII character support	Non-ASCII characters may be used in the input, output directories, files, etc.
	Multi-camera support in the same project	Create projects using images from different cameras and process them together
	Multispectral camera rig support (beta)	Process images from multispectral cameras, with or without calibrated reflectance panels (CRP) and use your formulas to calculate indices from available spectral bands (Micasense and DJI, incl. hyperspectral models)
	LiDAR + RGB images from PIX4Dcatch	Process both LiDAR and RGB image outputs from PIX4Dcatch as full terrestrial workflows and generate exports
	RTK + IMU data support	Get faster and more accurate camera calibration runs when processing with RTK accuracy
	Import image geolocations and orientations	Supply your values of image geolocations and/or orientations (f.i. missing from EXIFs or after PPK steps)
	Ground Control Points (GCPs) and Checkpoints	Import 3D GCPs or/and 3D checkpoints to improve/check absolute geolocation accuracies of projects
	Manual Tie Points (MTPs) and Manual Tie Checkpoints	Import MTPs to improve the scene reconstructions or check the quality of the processed projects
	Known or custom reference coordinate system	Select EPSG code, WKT format, or use a custom WKT to create your local system for 2D/3D transformations
	Local vertical coordinate system references	Use local (or global) vertical height coordinate reference systems in confluence with available 50+ geoid models or custom constant geoid height
	Site localization support	Import a WKT2 to set your custom coordinate system transformations for the Site Localization projects
	Region of interest (ROI)	Draw area multipolygons to generate results inside/outside specific boundaries to manage the extent of outputs generated for a project, speed up the processing, respect privacy, or even create sharper outputs

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PROCESSING	**Pre-processing cameras**	Read and validate exif/xmp, apply 2D/3D CS transformations, automatically select supported camera model definitions from internal camera DB (Parrot, DJI, Skydio, D2M, SONY, Delair, senseFly, Hasselblad, MicaSense, Airinov, Autel, XACTI) or use the Pix4D generic camera model (new cameras - upon request)
	CS coordinates 2D/3D transformations	Transform your input CS coordinates into desired output CS coordinates
	Calibration	Optimize internal camera parameters, such as focal length, principal point of autocollimation and lens distortions. Correct the warp of images taken with rolling shutter cameras to maintain accuracy even when flying fast and low
	Reoptimize	Reoptimize internal and external camera parameters based on GCPs or MTPs supplied after calibration to improve reconstructions
	AutoGCPs	Let PIX4Dengine automatically find and mark your GCPs on images without human intervention
	Sky & Water segment detection	Automatically remove sky and/or water segments from images to generate smooth, noise-free point cloud
	Depth point cloud	Create a depth point cloud based on LiDAR inputs from PIX4Dcatch. It can be serialized in the same manner as any other densified clouds
	Point cloud densification	Produce a detailed dense 3D point cloud, which can be used as a basis for DSM, DTM, 3D meshes, etc. Modify settings for point cloud filtering and smoothing options. Compensation for changes in brightness, luminosity, and colour balancing of images is automatic
	Depth & dense fusion	Fuse depth point clouds points into dense point clouds
	Mesh	Generate geometries and textures to create 3D meshes
	DSM & DTM	Create digital surface/terrain models
	Orthomosaic	Create orthomosaic based on the digital surface model and the images specifically for specific types of your captures. Automatically remove clutter and moving objects
	Reflectance, Index maps (beta)	Create reflectance maps and/or index maps as per your custom formulas. Supported reflectance targets: AirCalib, Parrot, MicaSense, Sentera
	Point cloud alignment	For scene difference inspections, align two point clouds from different construction/urban scene time captures without a need to use GCPs or MTPs
	Custom QA report interface (beta)	Create your own, customized QA reports, assess the accuracies and quality of scene reconstructions
EXPORTS	**Point cloud (.las, .laz)**	Export generated point clouds in .laz and .las file format (v1.4 and v1.2) for depth fusion and densified point clouds
	Point cloud (Cesium 3D tiles, .slpk)	Export a point cloud in tiled Level-of-detail (LOD) Cesium 3D tiles (.b3dm, .json) and .slpk file format
	Mesh (.obj)	Export a 3D textured mesh in .obj
	Mesh (Cesium 3D tiles, .slpk)	Export a 3D textured mesh in tiled Level-of-detail (LOD) Cesium 3D tiles (.b3dm, .json) and .slpk file format
	DSM, DTM, Orthomosaic, reflectance, Index maps (.tiff)	Export generated geotiffs in a single .tiff or tiles, optionally in cloud optimized geotiff format (COG). Compression LZW is available
	Quality report (.json)	Assess quality metrics of scene reconstructions. Use Pix4D graphic pdf generator example or build your own
EXPERIMENTAL FEATURES	**Fast 2D processing pipeline (calib/ ortho)**	Very fast processing of nadir images directly to orthomosaic
	Arbitrary CRS support	Create own local coordinate system

HARDWARE SPECS

CPU: Quad-core or hexa-core Intel i7/i9/Xeon, AMD

GPU: GeForce GTX 1070 and up (compatible with OpenGL 3.2)

HD: Solid state drive (SSD)

OS: Windows (64 bit)
Ubuntu 22.04 (64 bit)
Best performance

RAM: 32GB RAM (or more)

Amazon Web Services:
m6i.2xlarge for 2,000 images
m6i.8xlarge for 5,000 - 10,000 images

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