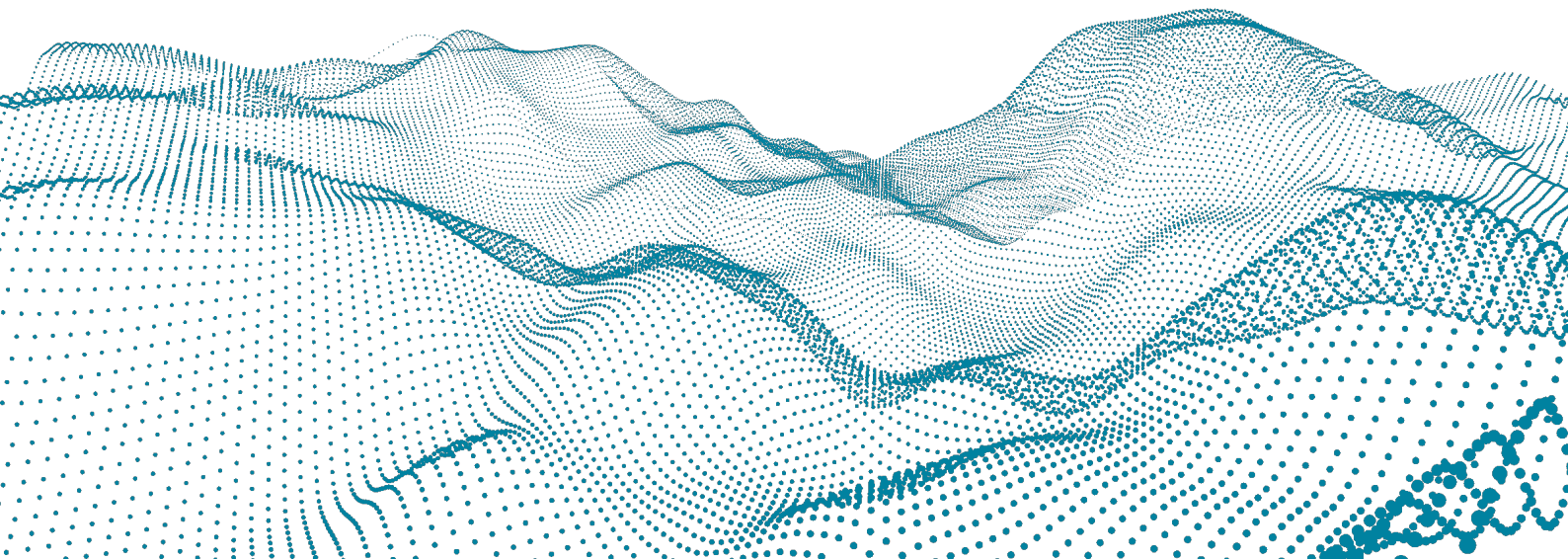
roboception

Roboception GmbH | January 2026

rc_visard_ng 3D Stereo Sensor

FIRMWARE CHANGELOG



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1 26.01.0 (2026-01-28)

1.1 New Features

- Support of suction cups and movable fingers in gripper definition (`rc_gripper_db`) and CollisionCheck (`rc_collision_check`): When modelling a gripper, single gripper elements can be assigned a `function_type`, e.g. `SUCTION_CUP` or `FINGER`. Elements marked as suction cups will be ignored during collision checking, so that suction cups can now be modelled correctly for point cloud collision checking of suction grasps. Elements marked as fingers can have variable positions. By defining the zero position of the finger elements, variable strokes can be assigned to user-defined grasps in SilhouetteMatch and CADMatch. This makes the grasp definition with collision checking in complex bin picking applications more comfortable.
- New detection services for easier response parsing in BoxPick (`rc_boxpick`), SilhouetteMatch (`rc_silhouettematch`) and CADMatch (`rc_cadmatch`): The new services `compute_grasps_extended` in BoxPick, and `detect_object_extended` in SilhouetteMatch and CADMatch perform the same detection tasks as their non-extended counterparts, but deliver the results in a different structure that is easier to parse. Instead of returning items or matches as a separate list next to the grasps, each grasp in the response now contains information about its corresponding object, e.g. the object's pose that is required for exact placement. Thus, retrieving the object information has become much easier.
- gRPC Interface: A new `ImageEventsInterface` service allows sending `depth_acquisition_done` events that signal when the image acquisition for depth computation is completed. This event can be used to determine when it is safe to move the robot or change the scene while a detection is still in progress. This helps for optimizing cycle times in robot applications.

1.2 Improvements and Fixes

- CollisionCheck (`rc_collision_check`):
  - Added new parameter `pointcloud_watertight` that allows to switch off filling holes in the depth image for point cloud collision checking
- Generic Robot Interface:
  - Support of fragmented TCP messages by TCP message buffering
- CADMatch (`rc_cadmatch`):
  - Improved refinement run-time
- ItemPick (`rc_itempick`):
  - Fixed wrong number of items returned if `allow_any_grasp_pose` is active
  - Removed empty `template_id` and `view` fields from ItemPick responses
- Web GUI:
  - New pose priors are added with flipped orientation by default
  - Minor layout improvements and fixes

2 25.10.2 (2025-11-28)

2.1 Improvements and Fixes

- Fixed manual setting of system time in case the RTC battery is empty

3 25.10.1 (2025-11-11)

3.1 Improvements and Fixes

- Generic Robot Interface: fixed failing initialization

- SilhouetteMatch (`rc_silhouettematch`): fixed failing snapshot download when a base plane calibration was set manually

4 25.10.0 (2025-10-28)

4.1 New Features

- Generic Robot Interface: The Generic Robot Interface (https://doc.rc-visard-ng.com/latest/en/gri.html) provides a standardized way to communicate with the rc_reason software modules using simple TCP socket communication, which is natively supported by all major robot platforms and PLCs. It allows creating pre-defined jobs for all services and parameters and triggering these jobs synchronously or asynchronously. Once a job has finished, the chosen return poses can be retrieved sequentially.

4.2 Improvements and Fixes

- LoadCarrier (`rc_load_carrier` and `rc_load_carrier_db`):
  - The maximum allowed dimensions for a load carrier have been increased to 5 meters to support very large load carriers.
- ItemPick (`rc_itempick`) and BoxPick (`rc_boxpick`):
  - The maximum number of computed grasps has been increased to 100. This allows for computing all grasps of a layer packed with boxes in a depalletizing application with triggering a single detection.
- CADMatch (`rc_cadmatch`):
  - Improved score computation
  - Fixed symmetry handling for partial templates
  - Changed color of returned matches from red to green in result visualization
  - Added option to show discarded matches in 3D result visualization of CADMatch
  - Added “Discarded Matches” and “Load Carriers” to CADMatch result image streams
- SilhouetteMatch (`rc_silhouettematch`):
  - Changed color of returned matches from red to green in result visualization
- Web GUI:
  - Added new page for Generic Robot Interface (GRI) functionality
  - Updated suggested hand-eye calibration pictograms for better image coverage
  - Added separate ABB robot pose format to have correct quaternion order
  - Show confirmation dialogue before deleting a hand-eye calibration
  - Fixed detection of connected rc_randomdot projector
  - Adjusted aspect ratio of result image streams to native image aspect ratio
  - Minor layout adaptions and fixes

5 25.07.0 (2025-07-29)

5.1 New Features

- ItemPick (`rc_itempick`) and BoxPick (`rc_boxpick`): Grasps can optionally be checked for collisions between the gripper and the point cloud. This allows for collision-free grasp computation also for two-finger grippers.
- CADMatch (`rc_cadmatch`) and SilhouetteMatch (`rc_silhouettematch`): When sorting grasps according to the smallest angular deviation from the preferred TCP orientation, it is possible to select only a single axis that should be considered during sorting. This gives more appropriate grasps when picking continuously symmetric objects using this sorting strategy.

5.2 Improvements and Fixes

- CADMatch (`rc_cadmatch`):
  - Improvement of pose refinement
- Stereo camera calibration (`rc_stereocalib`):
  - The last pose can now also be 20% closer instead of only 20% further away to improve usability
  - Automatic self-calibration is now just reported, instead of applied to avoid decalibration in some critical scenes
- Hand-eye calibration (`rc_hand_eye_calibration`):
  - Improved robustness of grid detection. Up to four squares can now be occluded.
  - Rejecting grid detections with high errors
- GripperDB (`rc_gripper_db`) and CollisionCheck (`rc_collision_check`):
  - Fixed long conversion time for large CAD models leading to timeouts during gripper CAD element upload
- ItemPick (`rc_itempick`), BoxPick (`rc_boxpick`), SilhouetteMatch (`rc_silhouettematch`) and CADMatch (`rc_cadmatch`):
  - Fixed using wrong load carrier detection parameters after startup
- WebGUI:
  - Show warning if camera calibration indicates a baseline change, which in almost all cases means wrong grid dimensions
  - Show suction surface size for ItemPick detection result
  - Improved 2D and 3D result visualization of ItemPick and BoxPick
  - Added counter and capacity text to all database lists
  - Minor fixes

6 25.04.0 (2025-04-25)

6.1 Improvements and Fixes

- Camera (`rc_camera`):
  - Improvements of HDR mode for more equally exposed images
  - In HDR mode the brightness of the image with middle exposure time is reported to ease selection of gain value
- CADMatch (`rc_cadmatch`):
  - Improvements of pose refinement for continuously symmetric objects and objects with planar surfaces
- WebGUI:
  - Fixed grasp and match info boxes sometimes not closing by clicking on X
  - Fixed 3D result visualization in SilhouetteMatch: Missing animation of object retraction
  - Fixed triggering stereo acquisition when opening 3D result visualization
  - Added special info box for gain in HDR mode
  - Minor fixes

7 25.01.0 (2025-01-28)

7.1 New Features

- ItemPick (`rc_itempick`) and BoxPick (`rc_boxpick`): Increased flexibility of grasp computation by considering grasp symmetries. A new runtime parameter `allow_any_grasp_z_rotation` optionally enables the computation of completely rotationally symmetrical grasp points in order to obtain maximum grasping options. Additionally, the preferred TCP orientation of the robot can be defined for automatically selecting the most suitable collision-free grasp for each item and to filter unreachable grasps (see e.g. Setting the preferred orientation of the TCP in ItemPick).
- CADMatch (`rc_cadmatch`): New module for detecting 3D objects based on CAD templates (see CADMatch)

7.2 Improvements and Fixes

- API:
  - Added sorting of keys in JSON and UBJSON responses for better use with some optimized parsers (e.g. on Rockwell PLCs)
  - Added `system/max_power_test` which fully loads GPU (and CPU) to consume max power for 10 seconds to test the power supply.
  - Fixed bug where preferred orientations and sorting strategies were reset on firmware updates
- BoxPick+Match (`rc_boxpick`):
  - Fixed bug that led to creation of temporary phantom views
- WebGUI:
  - Show container image name in UserSpace App container details

8 24.10.1 (2024-11-21)

8.1 Fixes

- GEV server (`rc_gev_server`):
  - mark FileSize register as NoCache to fix camera calibration via rc_cube after self calibration

9 24.10.0 (2024-10-24)

9.1 New Features

- ItemPick (`rc_itempick`), BoxPick (`rc_boxpick`) and SilhouetteMatch (`rc_silhouettematch`): New sorting strategy to sort grasps and matches according to their distances from a user-defined point (see e.g. SilhouetteMatch sorting strategies)
- Added UserSpace proxy configuration
- Add CA Certificate upload functionality
- GEV server (`rc_gev_server`):
  - Add RawCombined component and file interface for camera calibration via rc_cube
  - Add registers and chunk data with selfcalibration counter and offset

9.2 Improvements and Fixes

- UserSpace:
  - Limit container logs size.
- Hand-Eye Calibration (`rc_hand_eye_calibration`):
  - Improved robustness of grid detection
- BoxPick+Match (`rc_boxpick`):
  - Fixed untextured rectangles not being returned when minimum coverage is given
- SilhouetteMatch (`rc_silhouettematch`):
  - Improved detection of objects when “Object Plane Detection” is used
- WebGUI:
  - Add button to download model or collision model ply from SilhouetteMatch template
  - Add option to filter database lists
  - Add option to toggle gripper element visibility
  - Rename R, P, Y to Rx, Rz, Rz and Roll/Pitch/Yaw to Rotation
  - Bring back logarithmic slider scaling for exposure times and min/max distances
  - Fixed SilhouetteMatch CAD objects not showing in 3D result visualization
  - Minor layout improvements and fixes

10 24.07.0 (2024-07-26)

10.1 New Features

- Manually configure additional NTP servers
- Allow UserSpace configuration via QR code
- Measure node (`rc_measure`)
  - New Measure node
- BoxPick+Match (`rc_boxpick`)
  - Support detection of 3D boxes by setting z dimension of item model to detect rectangles corresponding to all sides of a box
  - Detection verification when 3D boxes are detected inside a load carrier
  - Visualization of 3D boxes in WebGUI
  - New allow_untextured_detections parameter to also return rectangles with matching dimensions but without matching view
  - possibility to set user-defined names for views for easier reference
- SilhouetteMatch (`rc_silhouettematch`)
  - Add new check_collisions parameter and check_collisions_during_retraction parameter
- WebGUI:
  - Allow SilhouetteMatch base plane calibration in external pose frame
  - New interactive gripper creation by moving elements with the mouse
  - New System Time page for configuring synchronization including additional NTP servers
  - Option to duplicate and rename load carriers, grippers and regions of interest

10.2 Breaking Change

- Stereo Matching (`rc_stereomatching`)
  - Moved service call `measure_depth` to new node `rc_measure`

10.3 Improvements and Fixes

- BoxPick (`rc_boxpick`)
  - Return only items corresponding to the returned grasps
  - Higher matching performance on small or weakly-textured boxes
  - Improved grasp ellipse computation for partly occluded textured rectangles
- gRPC Interface:
  - Fix subscribing only to left image
- WebGUI:
  - Add filter possibility to dropdown fields and support arrow and tab keys
  - Show more container information on UserSpace page
  - Remove HDR warning for tag detections
  - Make “Exact Pose” the default when setting a pose for a load carrier
  - Add acquire button to hand-eye calibration exposure settings when in software trigger node
  - Fix cut-off point cloud in 3D result visualization
  - Show hint in camera calibration and warning bar when self calibration counter gets greater than 0
  - Support arrow keys to navigate through matches and grasps in 3d result visualizations (ItemPick, BoxPick, SilhouetteMatch)
  - Delay hover popups for grasps, matches and load carriers in 3D result visualizations
  - Bring back progress bar on template and CAD element upload
  - Add option to duplicate a gripper element or a grasp
  - Minor layout improvements and fixes

11 24.04.2 (2024-05-15)

11.1 Fixes

- SilhouetteMatch (`rc_silhouettematch`):
  - Fix collision checking with point cloud for grippers with rotated elements.
- WebGUI:
  - Minor fixes.

12 24.04.1 (2024-05-08)

12.1 Improvements and Fixes

- Camera (`rc_camera`):
  - Limit max exposure time to 23ms and set that as default.
  - Fixed reporting out1 reduction without delay when camera trigger is on.
  - Fixed turning off triggering and resetting exposure time and gain when enabling / disabling temporary exposure settings (for camera calibration).
- All rc_reason detection modules:
  - Trigger camera if needed (i.e. when no depth image needed, but camera in trigger mode).
- BoxPick+Match (`rc_boxpick`)':
  - Fix crash in grasp computation in some corner cases when object is partly outside the image.
- WebGUI:
  - Minor fixes and improvements.
  - Disable exposureAdaptTimeout on DepthImage page when in Continuous mode.
  - Bring back progress bar on template and CAD element upload.

13 24.04.0 (2024-04-23)

13.1 New Features

- Camera (`rc_camera`):
  - Support for triggering camera (software or hardware) via new parameters:
    * acquisition_mode
    * trigger_source
    * trigger_activation
- WebGUI:
  - New collision check visualization: Show contact point and provide collision category (in collision with LoadCarrier, Matches or PointCloud, etc.) in 3D visualisation for all rc_reason modules.

13.2 Improvements and Fixes

- TagDetect (`rc_april_tag_detect`, `rc_qr_code_detect`):
  - Allow setting size also when no ID or only family is given and allow size filtering also in these cases.
- LoadCarrier (`rc_load_carrier`):
  - Improve detection for some corner cases.
  - Add detection timeout of 25s
- BoxPick+Match (`rc_boxpick`)':
  - Allow grasps only on unoccluded item surface.
- WebGUI:
  - SilhouetteMatch: Draw unchecked grasps in yellow color.
  - Gripper: keep global element and TCP pose when changing the parent

14 24.01.1 (2024-03-11)

14.1 Improvements and Fixes

- Ensure gRPC server can always start by adding port to reserved ports.
- Don't scale down visualization images.
- Hand-Eye Calibration (`rc_hand_eye_calibration`)':
  - Forcing detection of whole grid again as partial detection could result in degraded calibration in some corner cases. Instead exclude overexposed grid points from calculation.
  - Excluding grids if more than 16 calibration points (i.e. 4 squares) are over-exposed.
- EKI Bridge (`rceki_bridge`):
  - Log received and sent messages with info level so they show up in WebGUI log for ease of KRL program debugging.
- REST-API:
  - Prevent manually setting time to a date before firmware build time.
- WebGUI:
  - Minor improvements.

15 24.01.0 (2024-01-29)

first public release

roboception

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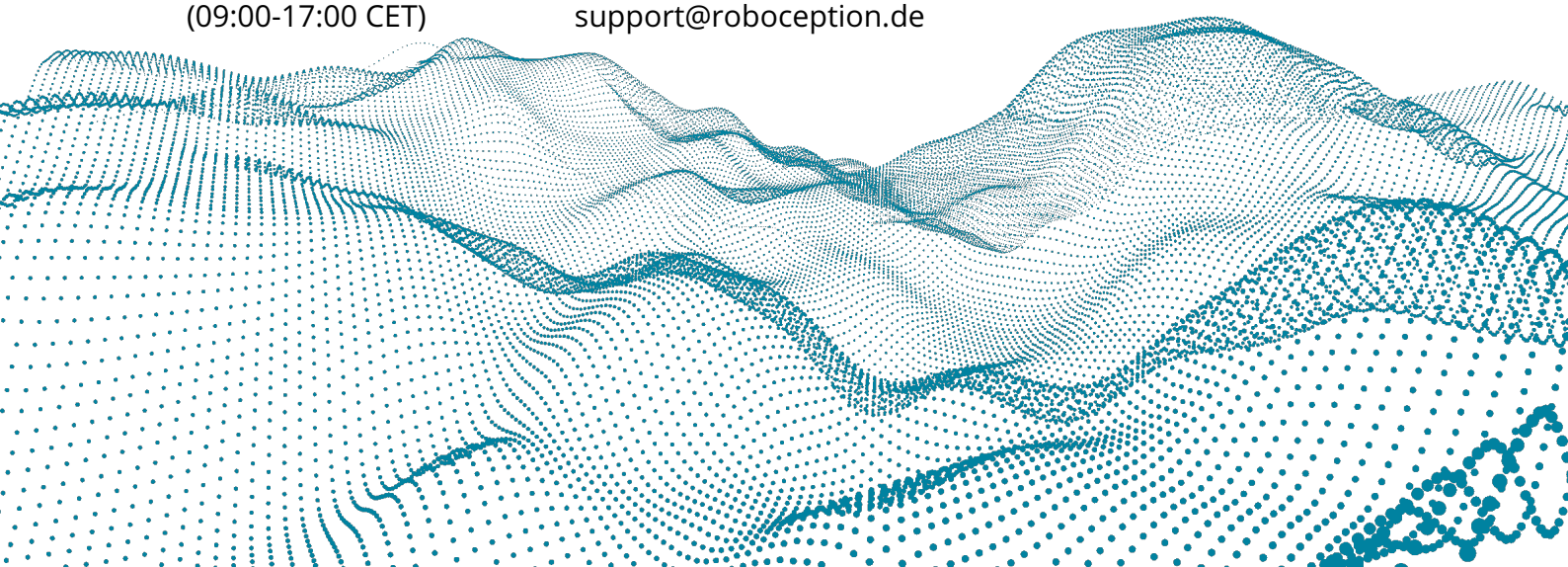
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