

Sprint Review

V-SLAM



October 21st, 2024

❑ HKMC A3 Demo-2 Release

- Demo dates: 22.10 and 07.11
- Tested mapping and localization params on DRV3L.
- Multiple releases to MTCK (250m, 300m and 500m).
- Issue analysis and debugging.

❑ Mapping

- Tuned parameters for 500 meter maps
- Added support for variable size maps
- Added new ROS nodes for debugging
- Bug fixing in vslam_master

❑ Localization

- Tuned the parameters for upto 500m maps.

❑ **Data processing and evaluation**

- Create training and replay 500 meters sequences
- Updated the workflow to test code in configured input branches
- Modified data exporter in evaluation workflow to support localization and gps signals analysis

Sprint Review

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October 21st, 2024
Prabhash Kumar Jha
MTCE Camera

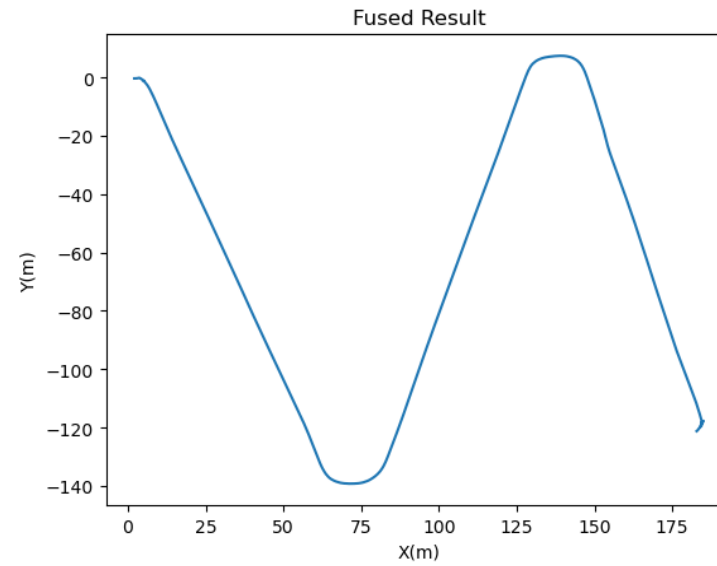
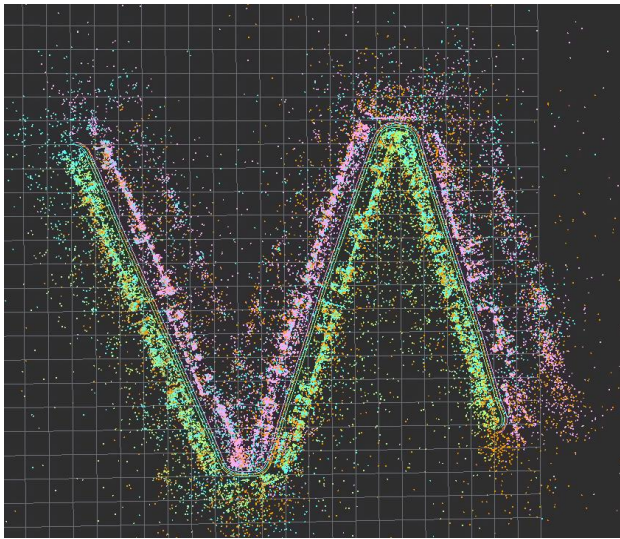
Sprint tasks

■ HKMC Demo

- Created on top of V1.9 A3 release.
- Tuned localization params and tested on 500m recordings on DRV3L board(Thanks Mohamed).
- Created three releases viz. 250m, 300m and 500m trajectory lengths.
- Adapted the release to specific versions of SD/OD/PLD/IDP/VF.
- Increased the control trajectory length to support upto 1km.
- Debugged control trajectory transfer issue with Abish.
- No further tests possible in the NEN vehicle untill Wednesday(moved to HKMC location).
- 500m Demo -> 07th November.

Sprint tasks

■ HKMC Demo

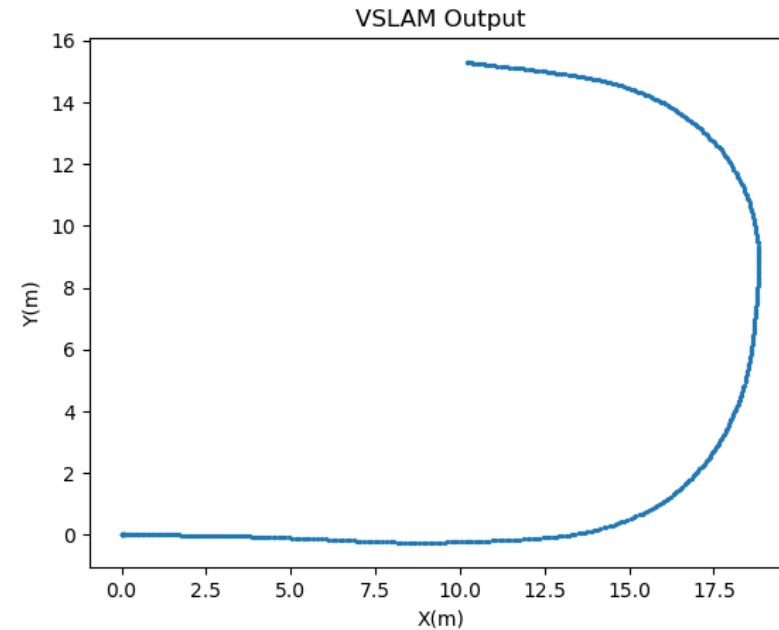
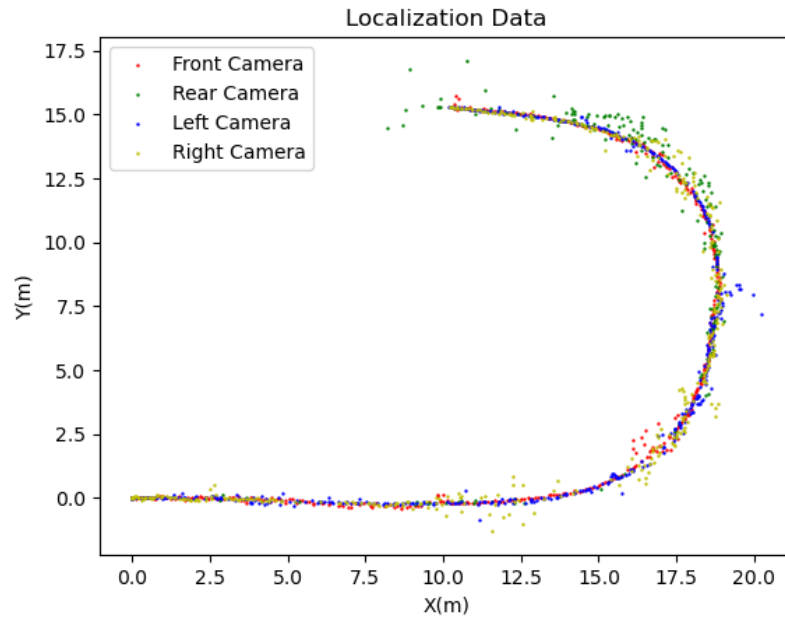


Training sequence: 20240829_110843_MTCEJW1.006498-011465

Replay sequence: 20240829_111718_MTCEJW1.006253-011130

Sprint tasks

■ MPS2.0 Demo

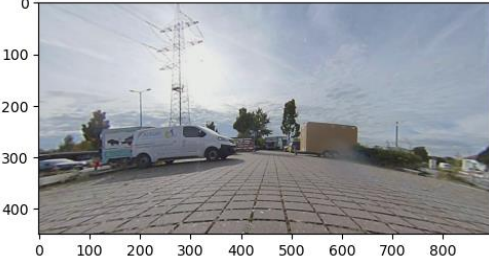


- **Sequence:** 20231018_144448_MTCEJW1_with_NE1_N_Calib, camera_ne1n_mtck_svm.cfg

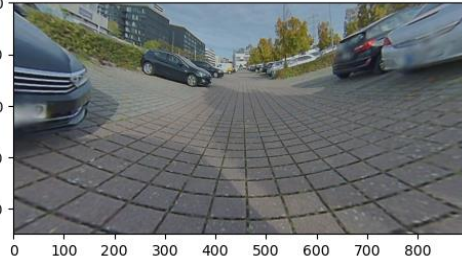
Sprint tasks

NE1N

Camera 0

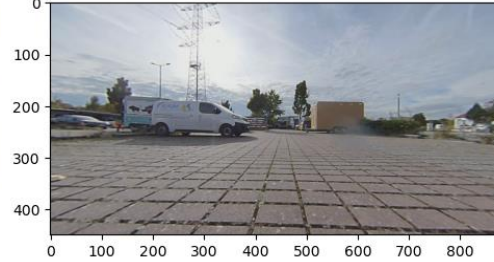


Camera 1

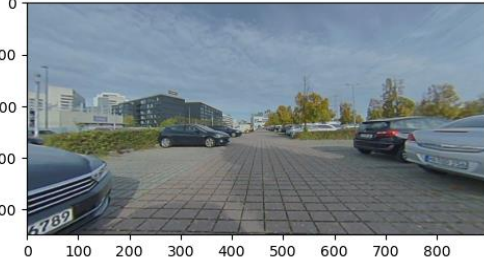


JW1

Camera 0



Camera 1



Camera 2



Camera 3



Camera 2



Camera 3



■ Others

- 000 for 1 day.

Sprint Review

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October 21th, 2024

Raúl Acuña

MTCE Camera

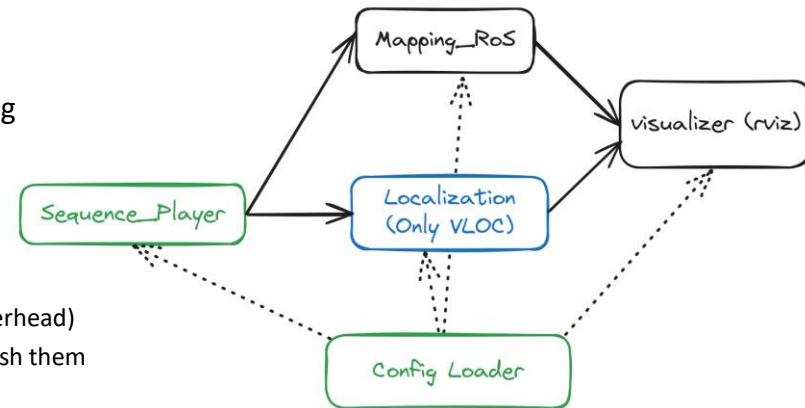
Sprint tasks

■ Mapping

- Refactored the SIL to reflect changes in vmap
- Added support for 500m maps (M.MVP release)
 - Tuned the max number of keyframes, the number of map points per keyframe and the max number of keypoints per frame
 - Tested on the SIL: Training OK but failed on localization
 - Supported Prabhash on M.MVP board tests: Both training and replay OK
- Fixed bug on the vslam_master that was causing an additional keyframe over the maximum to be included on the chunks causing segfaults
- Major new feature: variable size maps
 - vslam_Map struct now uses pointer for the keyframes and map points
 - Keyframes and map points now are independent and can be allocated with the required number depending on the situation (e.g., final map vs chunks)
 - Required major refactors to the way we work with maps

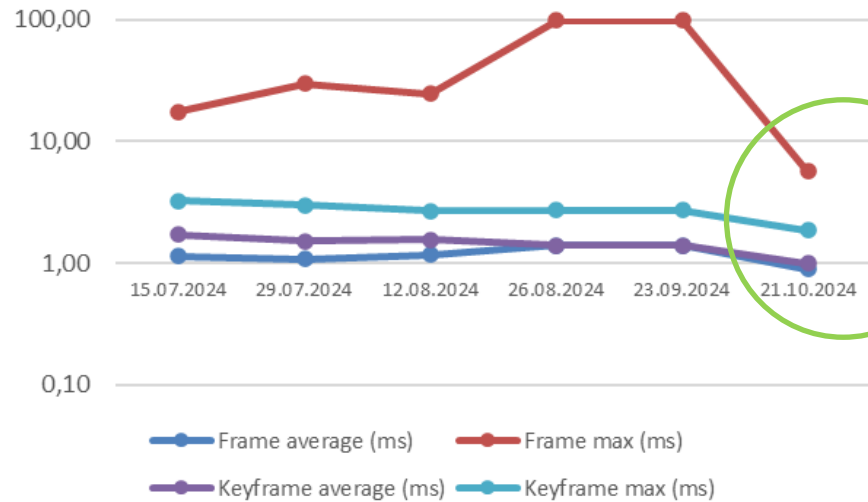
■ ROS2

- New constellation of nodes that will allow the debugging of VSLAM localization in ROS2
 - Motivation: To be able to debug and visualize data live when performing vmap and Vloc
 - Trigger reason: SIL was not working this sprint
 - New Nodes:
 - vslam_ros_mapping: mapping vra implementation in ROS
 - vslam_ros_visualizer: RVIZ visualization (based on old loc_viz but without overhead)
 - vslam_ros_sequence_player: loads a sequence of images from disk and publish them on ROS topics
 - vslam_ros_config_loader: loads MPA config files and configures all nodes
 - vslam_ros_messages: defines messages for sending configuration information
 - vslam_ros_vloc: vloc vra implementation in ROS

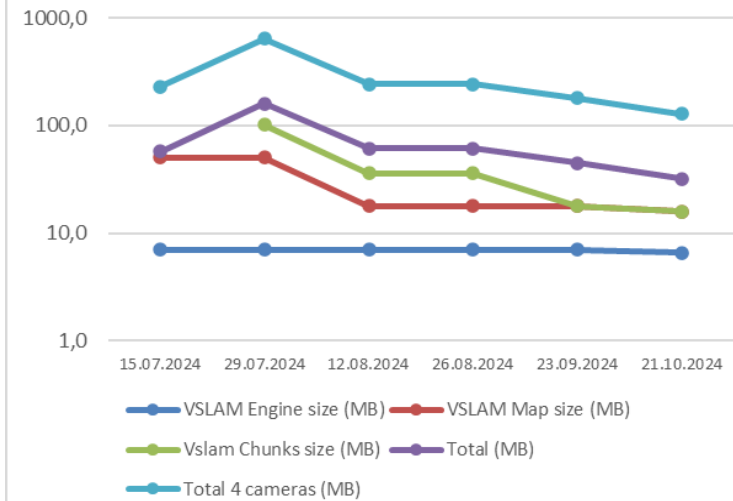


Mapping KPIs

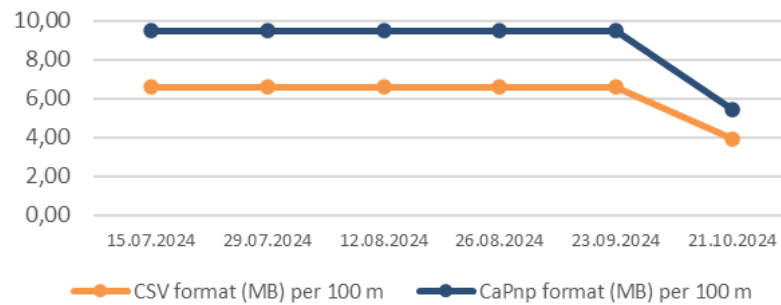
Runtime



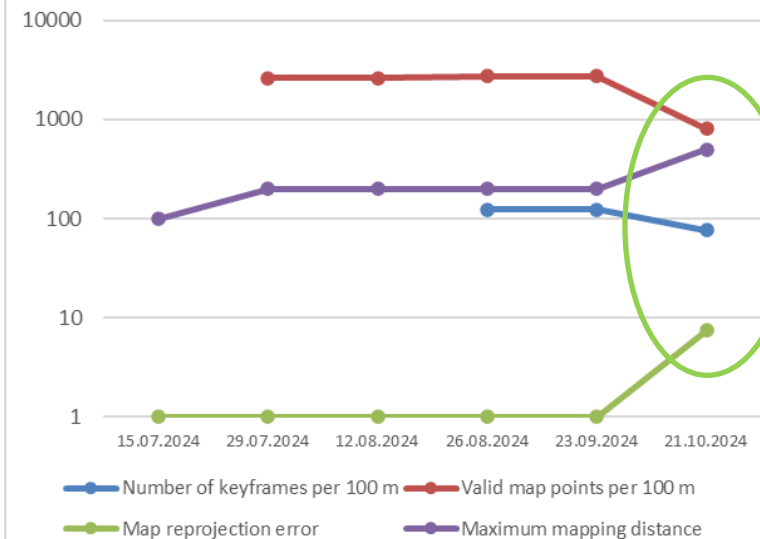
RAM Memory requirements



Disk Memory requirements per 100 meters vslam_Map saved on disk for 1 camera



Other metrics



Thank you