

Feature/imm ukf pda tracker #1231

New issue

Merged

k0suke-murakami merged 31 commits into `develop` from `feature/imm_ukf_pda_tracker` on May 14, 2018

💬 Conversation 52

🔗 Commits 31

📄 Checks 0

📁 Files changed



k0suke-murakami commented on Apr 24, 2018 • edited

Status

PRODUCTION / DEVELOPMENT

Description

Multiple Objects Tracking algorithms by IMM-UKF-PDA tracker.
It estimates (x, y, velocity, yaw, yaw_rate) for each target.
It also classifies static/dynamic objects by using IMM.

imm_ukf_pda_tracker node


- Input:
 - autoware_msgs::CloudClusterArray: /cloud_clusters
 - tf (Tracking objects in world coordinate)

- Output:
 - autoware_msgs::CloudClusterArray: /tracking_cluster_array

visual_cloud_cluster node

- Input:
 - autoware_msgs::CloudClusterArray: /tracking_cluster_array
- Output:
 - jsk_recognition_msgs::BoundingBoxArray: /tracking_cluster_array/jsk_bb

Reviewers

-  amc-nu ✓
-  yk-fujii 📄
-  aohsato 📄

Assignees

No one assigned

Labels

version:autoware-ai

Projects

None yet

Milestone

v1.7

Development

Successfully merging this pull request may close these issues.

6 participants



- visualization_msgs::Marker:
/tracking_cluster_array/velocity_arrow

Todos

- ☐ Tests
- ☒ Documentation

Steps to Test or Reproduce

Launch `imm_ukf_pda_tracker` and `visual_cloud_cluster` through Computing tab in RuntimeManager.

You also need to launch any clustering algorithms like `euclidian_cluster` since `imm_ukf_pda_tracker` have to subscribe `/cloud_clusters`.

Sample videos

Tested many situations.

Palo Alto: https://youtu.be/kwtylnd_HD4

Kohta-kameriya: <https://youtu.be/JdtGYEaEE9Q>

Nagoya-city: https://youtu.be/YgESK-Fd_p8

Moriyama: <https://youtu.be/ge1o8P7r6zw>



koh-murakami-ai added 8 commits [6 years ago](#)



Add new `imm_ukf_pda_tracker` feature

0591199



add ros style enum

3fb2869



modify `getNearestEuclidCluster` argument

4997ee2



Add run-time manager script

4f532ea



Comment out unnecessary header file

feb2885



Remove 'using namespace'

873a262



Refactoring codes

6625386



`lidar_tracker/immukfpda` refactoring

46ea483



amc-nu self-requested a review 6 years ago



amc-nu suggested changes
on Apr 24, 2018

[View reviewed changes](#)



amc-nu left a comment

Member

Can you please add a README.md with info on how to use?

-Requirements (clustering, image, ndt, ...)

-How to launch

-Input/outputs

-How to test? i.e. using Moriyama rosbag



koh-murakami-ai added 2 commits [6 years ago](#)



Add README.md



a843f1f



Modify README.md



333c83c



amc-nu commented on Apr 25, 2018

Member

@cirpue49 thanks for the file! However I still see some missing parameters from your launch file, not listed in the README.

```
<arg name="init_" default="false" />
<arg name="gamma_g_" default="9.22" />
<arg name="p_g_" default="0.99" />
<arg name="p_d_" default="0.9" />
<arg name="distance_thres_" default="99" />
<arg name="bb_yaw_change_thres_" default="0.3" />
<arg name="dist_from_init_thres_" default="3.0" />
<arg name="init_yaw_" default="100" />
```



Can you add the meaning of each, and why the default number.

if you used a paper for reference can you also please add it.

The video was a nice addition!

thanks



koh-murakami-ai added 6 commits [6 years ago](#)



Modify README.md



347e326



Add target_id visualizing



6eb83be



Refactor codes



9064a24



Change param handling slightly



d694c2d



Add reference to readme.md



5bc991c




Modify roslaunch params



d065944



 **aohsato** added this to the **v1.7** milestone
on May 8, 2018



amc-nu approved these
changes on May 8, 2018

[View reviewed changes](#)



 **aohsato** self-requested a review 6 years ago



koh-murakami-ai added 2 commits [6 years ago](#)



 Refactor codes

4ab2700



 Modify readme

8a28a36



aohsato suggested changes
on May 9, 2018

[View reviewed changes](#)

aohsato left a comment

@cirpue49 remove comments for your debug.
finally, please apply clang-format.
<https://github.com/CPFL/Autoware/blob/master/docs/jp/coding-standard.md>

```
ros/src/computing/perception/detection/packages/lidar_tracker/launch/imm_ukf_pda_tracker.launch
```

Outdated

```
8 + <arg name="life_time_thres_" default="10" />
9 + <!-- <arg name="bb_yaw_change_thres_" default="10" />
10 + <arg name="static_distance_thres_" default="10" />
11 + <arg name="input_topic_" default="lidar" />
```



aohsato on May 9, 2018

Please change topic type and name, refer here.
https://github.com/CPFL/Autoware/blob/master/ros/src/computing/perception/detection/packages/lidar_tracker/nodes/kf_lidar_track/kf_lidar_tracker.cpp#L64

```
ros/src/computing/perception/detection/packages/lidar_tracker/launch/imm_ukf_pda_tracker.launch
```

Outdated

```
22 + <param name="life_time_thres_" value="10" />
23 + <!-- <param name="bb_yaw_change_thres_" value="10" />
24 + <param name="static_distance_thres_" value="10" />
25 + <param name="input_topic_" value="lidar" />
```



aohsato on May 9, 2018

please use remap to decrease the number of
rosparam

ros/src/util/packages/runtime_manager/scripts/computing.yaml

Outdated

```
340 +         sync :
341 +         func : self.button_sync
342 +
343 +         - name : visualize_cloud_cluster
```



aohsato on May 9, 2018

please move this launch inside

`imm_ukf_pda_tracker.launch`

...on/packages/lidar_tracker/nodes/visualize_cloud_cluster/src/visualize_cloud_cluster_main.cpp

Outdated

```
8 + int main(int argc, char **argv)
9 + {
10 +
11 +     // std::cout<< 122<<std::endl;
```



aohsato on May 9, 2018

remove comment

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/imm_ukf_pda_tracker.cpp

Outdated

```
45 +     private_nh_.param<double>("distance")
46 +     private_nh_.param<double>("static")
47 +     // private_nh_.param<double>("bb_")
48 +     // private_nh_.param<double>("ini
```



aohsato on May 9, 2018

remove comment in this node

6 hidden conversations

[Load more...](#)

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/imm_ukf_pda_tracker.cpp

Outdated

```
9 + {
10 +     enum TrackingState: int
11 +     {
12 +         Die = 0,
```



aohsato on May 9, 2018

please comment to explain these states.

```
...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp
```

Outdated

```
20 +
21 + namespace Matches
22 + {
23 +     enum IsMatch: int
```



aohsato on May 9, 2018

what is this?

```
...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp
```

Outdated

```
57 +
58 + }
59 +
60 + void ImmUkfPda::callBack(autoware_m
```



aohsato on May 9, 2018

callback

```
...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp
```

Outdated

```
80 +
81 +     pose_in.header = input.header;
82 +     pose_in.pose = input.clusters[i
83 +     tran_>waitForTransform(pointcl
```



aohsato on May 9, 2018

you need to define `tracking_frame_id_`

```
...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp
```

Outdated

```
97 +     pose_in.header.frame_id = "world
98 +     pose_in.pose = output.clusters[
99 +
100 +     tran_>waitForTransform("/world"
```



aohsato on May 9, 2018

use `Duration(1.0)`



koh-murakami-ai added 5 commits [6 years ago](#)



Merge visualize_cloud_cluster.launch to imm_ukf_pda_tracker.launch 03eede8



Change naming for rosparams e3a9c1a



Add tracking_frame f6efc37



Modify matching_vec 37c46ac



Refactor ukf codes fe00113

16 hidden items

[Load more...](#)



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/imm_ukf_pda_tracker.cpp

Outdated

```
360 + }
361 + }
362 +
363 + double ImmUkfPda::getBboxArea(const
```



yk-fujii on May 13, 2018
pointer/reference



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/imm_ukf_pda_tracker.cpp

Outdated

```
375 + return S;
376 + }
377 +
378 + double ImmUkfPda::getJskBBoxYaw(const
```



yk-fujii on May 13, 2018
pointer or reference



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
384 + return yaw;  
385 + }  
386 +  
387 + double ImmUkfPda::getJskBBoxArea(co
```



yk-fujii on May 13, 2018
pointer or reference



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
524 + }  
525 + }  
526 +  
527 + void ImmUkfPda::updateJskLabel(UKF
```



yk-fujii on May 13, 2018
target is not modified.
const + reference or pointer



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
538 + }  
539 + }  
540 +  
541 + bool ImmUkfPda::isVisible(UKF target
```



yk-fujii on May 13, 2018
target is not modified.
const + reference or pointer



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
604 + return;  
605 + }  
606 +  
607 + void ImmUkfPda::updateTrackingNum(s
```



yk-fujii on May 13, 2018

`cluster_vec` is not modified.
const + reference or pointer



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
644 + return;  
645 + }  
646 +  
647 + void ImmUkfPda::probabilisticDataAs
```



yk-fujii on May 13, 2018

`input` is not modified in this method and
`measurementValidation` .

const + reference/pointer



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
738 + }  
739 + }  
740 +  
741 + void ImmUkfPda::makeOutput(autoware
```



yk-fujii on May 13, 2018

input is not modified



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/imm_ukf_pda_tracker.cpp

Outdated

```
792 + }
793 + }
794 +
795 + void ImmUkfPda::tracker(autoware_msgs::ImuDataConstPtr msg)
```



yk-fujii on May 13, 2018

input is not modified.



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...n/packages/lidar_tracker/nodes/visualize_detected_objects/src/visualize_detected_objects.cpp

Outdated

```
13 + pub_id_ = node_handle_.advertise<visualization_msgs::Marker>("lidar_tracker/visualize_detected_objects/marker", 10);
14 + }
15 +
16 + void VisualizeDetectedObjects::call()
```



yk-fujii on May 13, 2018

input is not modified



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...n/packages/lidar_tracker/nodes/visualize_detected_objects/src/visualize_detected_objects.cpp

Outdated

```
18 + visMarkers(input);
19 + }
20 +
21 + void VisualizeDetectedObjects::visMarkers()
```



yk-fujii on May 13, 2018

input is not modified



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/

Outdated

src/imm_ukf_pda_tracker.cpp

```
317 + lambda_vec.push_back(lambda_rm);
318 + }
319 +
320 + void ImmUkfPda::getNearestEuclidClus
```



yk-fujii on May 13, 2018

reference/pointer



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
340 + cluster = cluster_vec[min_ind];
341 + }
342 +
343 + void ImmUkfPda::associateBB(const s
```



yk-fujii on May 13, 2018

rp



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
360 + }
361 + }
362 +
363 + double ImmUkfPda::getBboxArea(const
```



yk-fujii on May 13, 2018

r/p



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_
tracker/nodes/imm_ukf_pda_tracker/
src/imm_ukf_pda_tracker.cpp

Outdated

```
375 + return S;
376 + }
377 +
378 + double ImmUkfPda::getJskBBoxYaw(con
```



yk-fujii on May 13, 2018

r/p



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

...ption/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/imm_ukf_pda_tracker.cpp

Outdated

```
384 + return yaw;
385 + }
386 +
387 + double ImmUkfPda::getJskBBoxArea(const
```



yk-fujii on May 13, 2018

r/p



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

.../computing/perception/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/ukf.cpp

Outdated

```
196 + jsk_bb_.pose.orientation.x = 1.0;
197 + }
198 +
199 + void UKF::updateModeProb(const std::
```



yk-fujii on May 13, 2018

reference or pointer



yk-fujii reviewed
on May 13, 2018

[View reviewed changes](#)

.../computing/perception/detection/packages/lidar_tracker/nodes/imm_ukf_pda_tracker/src/ukf.cpp

Outdated

```
344 + updateLidar(2);
345 + }
346 +
347 + void UKF::updateIMMUKF(const std::v
```



yk-fujii on May 13, 2018

reference or pointer



yk-fujii suggested changes
on May 13, 2018

[View reviewed changes](#)

yk-fujii left a comment

A large amount of Copy has a big influence on performance. Please remove unnecessary copies.



koh-murakami-ai added 4 commits [6 years ago](#)



Modify input for callback ad5553e



Refactor codes c0121db



Remove unnecessary comment 4d28a4c



Refactor codes a3154b9



k0suke-murakami merged commit **6763674** into develop on May 14, 2018



amc-nu commented on May 14, 2018

Member

You forgot to add Eigen to Package.xml and Cmakefile

Please fix it. This won't compile isolatedly

Example

https://github.com/CPFL/Autoware/blob/develop/ros/src/computing/perception/localization/lib/ndt_cpu/CMakeLists.txt#L7



1



kfunaoka mentioned this pull request on Mar 14, 2023

Create pull request Release/1.7.0

Closed

autwarefoundation/autoware_ai#151

23 tasks



amc-nu mentioned this pull request on Jan 16, 2019

Improve lidar_kf_track #1566

Closed

2 tasks



 **amc-nu** mentioned this pull request on Mar 5, 2019

Lidar_kf_track

🔒 Closed

autowarefoundation/autoware_ai#391



anubhavashok pushed a commit to
NuronLabs/autoware.ai that referenced this pull request
on Sep 7, 2021




Merge pull request

e254936

[autowarefoundation#1231](#) from

CPFL/feature/imm_ukf_... 



 **mitsudome-r** added the **version:autoware-ai** label
on Jun 14, 2022