Phriky-Units
Physical Unit Inconsistency Detection Tool for ROS

https://github.com/unl-nimbus-lab/phriky-units
jore@cse.unl.edu

• No programmer annotations.
• 87.0% True Positive rate for ‘high-confidence’ inconsistencies
• Best Tool Demonstration – ISSTA 2017

Supported by:
NSF awards #1638099 and #1526652

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Phriky-Units
Physical Unit Inconsistency Detection Tool for ROS

Rethink Robotics
AnyMal ETHZ
Clearpath
NIMBUS Lab UNL

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```c
float computeDistance(geometry_msgs::Pose goal, geometry_msgs::Pose current) {
    float dist = sqrt((goal.position.x - current.position.x)*(goal.position.x - current.position.x)
                     + (goal.position.y - current.position.y) + (goal.position.y - current.position.y)
                     + (goal.position.z - current.position.z) + (goal.position.z - current.position.z));
}
Phriky-Units

float computeDistance(geometry_msgs::Pose goal, geometry_msgs::Pose current) {  
    float dist = sqrt((goal.position.x - current.position.x)*(goal.position.x - current.position.x)  
                     + (goal.position.y - current.position.y) + (goal.position.y - current.position.y)  
                     + (goal.position.z - current.position.z) + (goal.position.z - current.position.z));
    return dist;  
}
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```cpp
void callback (const geometry_msgs::Twist &msg) {
  // TODO: fix this it is ugly!!
  // (divide ground truth from GPS!!)
  if (! enableAbsoluteError) {
    current_position.x = msg->linear.x;
    current_position.y = msg->linear.y;
    current_position.z = msg->linear.z;
  }
  desired_position.x = msg->angular.x;
  desired_position.y = msg->angular.y;
  desired_position.z = msg->angular.z;
}
```
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Monday 10:30 AM - Room# 223

Dimensional Inconsistencies in Code and ROS Messages: a Study of 5.9M Lines of Code

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