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“Week 5”

Terjadinya eror pada minggu sebelumnya membuat saya tidak dapat melakukan installasinya
sudo apt-get install ros-foxy-webots-ros2 dalam integrasi antara ros2 dan webots.

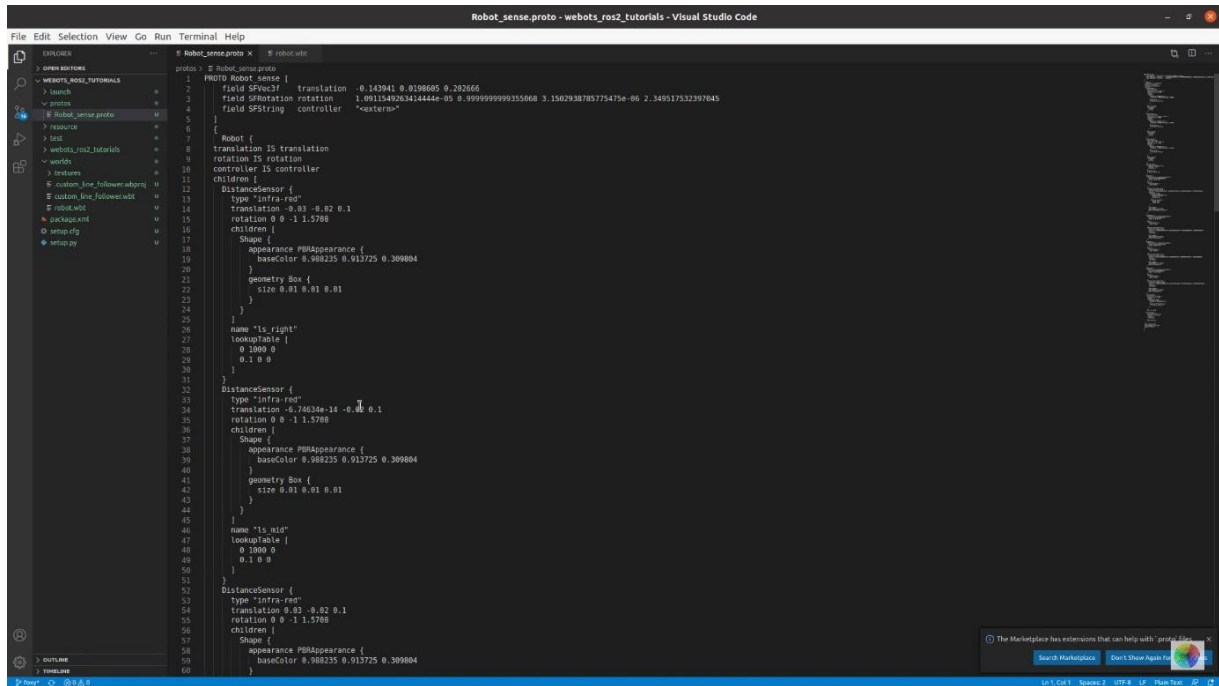
Video pembelajaran 6

https://www.youtube.com/watch?v=ZTJa5f5F5fU&list=PLt69C9MnPchkP0ZXZOqmlIGRTOch8o9GiQ&index=7&ab_channel=Softillusion

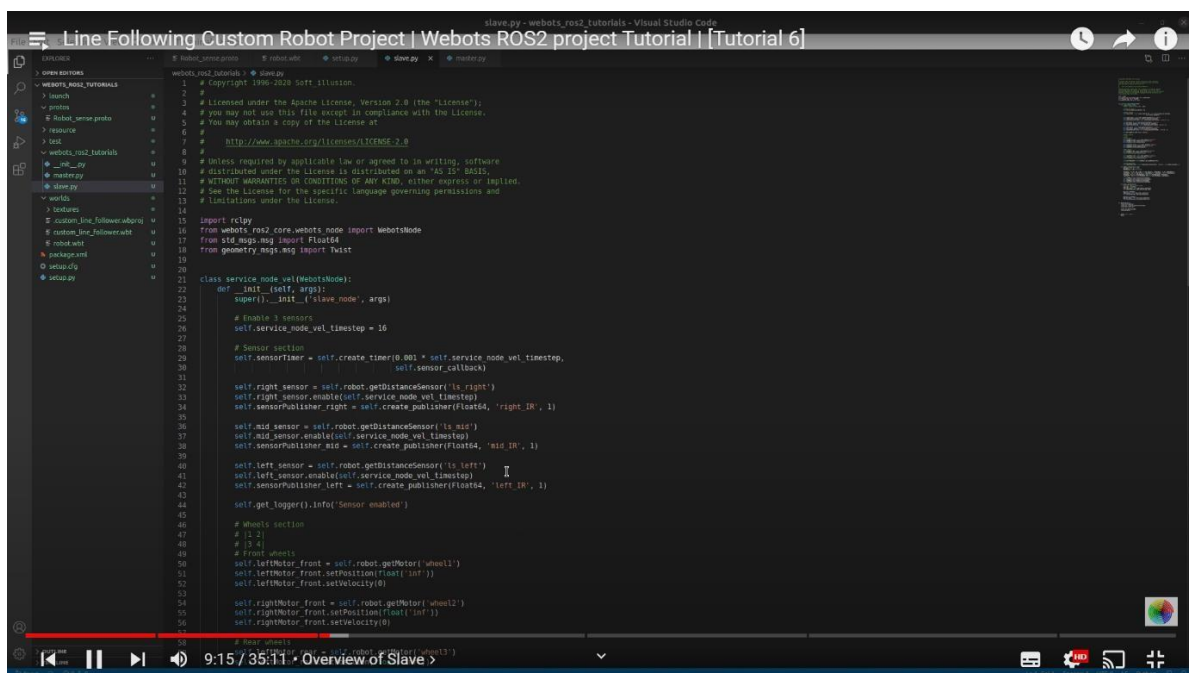


Pada video ke-6 week 4 pembelajaran robotika kali ini membahas mengenai project sederhana bagaimana cara pengoperasian Line Following custom Robot Project pada ubuntu.

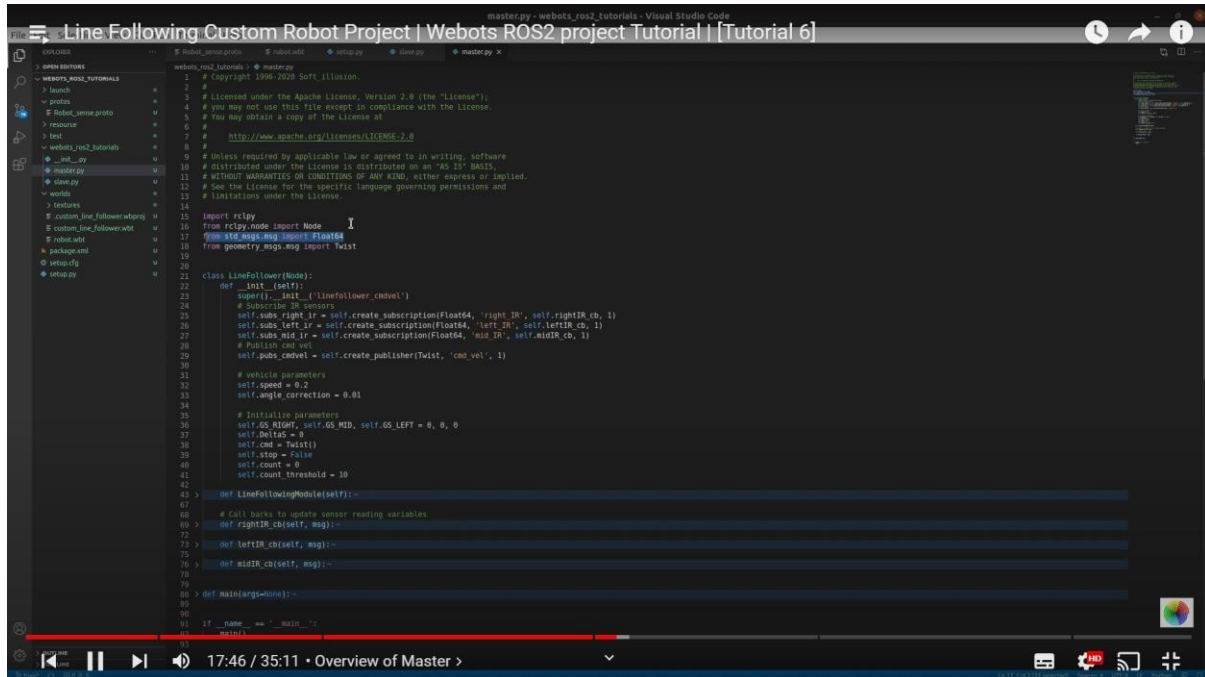
1. Langkah pertama dalam kode ini adalah mendeklarasikan file `line_following_launch.py` sebagai kode utama dalam proyek ini.



- Langkah berikutnya melibatkan deklarasi file slave.py agar bisa berinteraksi dengan robot. Di dalam slave.py, dapat dilakukan penyesuaian terhadap konfigurasi roda dan sensor pada robot, serta penyesuaian jarak sensor terhadap hambatan sesuai kebutuhan yang diinginkan.

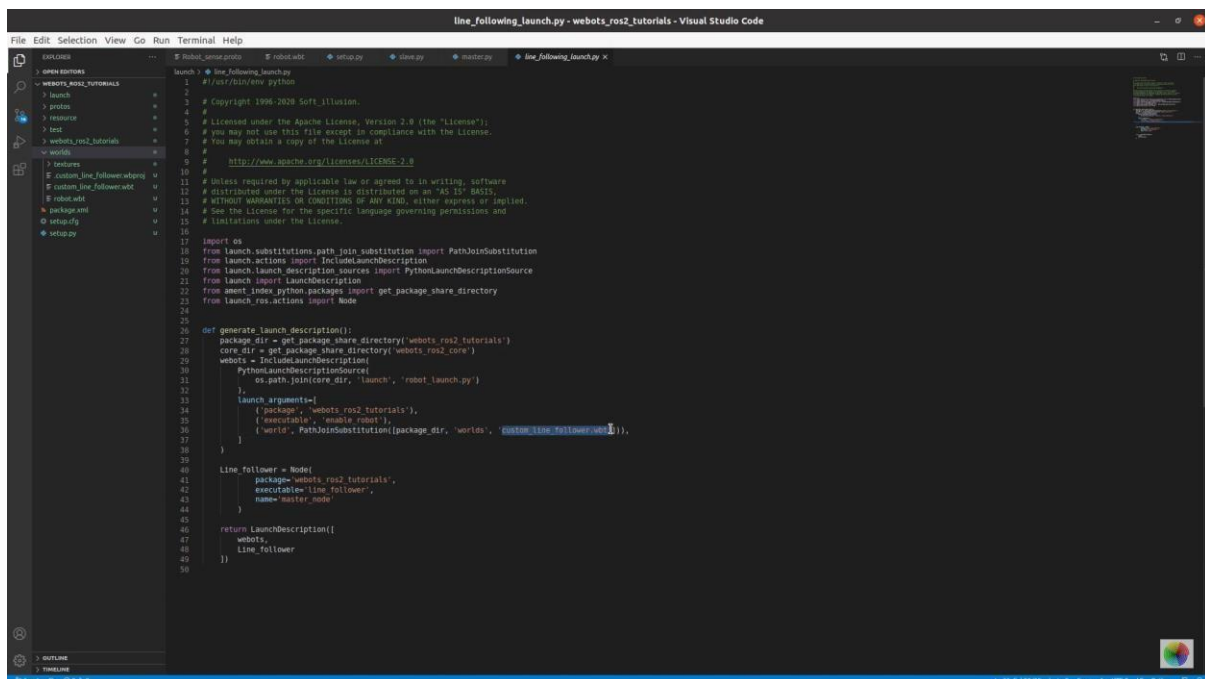


3. Selanjutnya ada berkas node master.py yang bertugas untuk mengevaluasi data dari slave.py dengan mengontrol arah gerakan robot kita, sehingga menghasilkan keluaran data yang diinginkan.



```
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9 # distributed under the License is distributed on an "AS IS" BASIS,
10 # WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
11 # See the License for the specific language governing permissions and
12 # limitations under the License.
13
14 import rclpy
15 from rclpy.node import Node
16 from geometry_msgs.msg import Twist
17
18 class LineFollower(Node):
19     def __init__(self):
20         super().__init__('linefollower_cmsvel')
21         # Subscribe IR sensors
22         self.subs_right_ir = self.create_subscription(Float64, 'right_IR', self.right_IR_cb, 1)
23         self.subs_left_ir = self.create_subscription(Float64, 'left_IR', self.left_IR_cb, 1)
24         self.subs_mid_ir = self.create_subscription(Float64, 'mid_IR', self.mid_IR_cb, 1)
25         # Publish cmd vel
26         self.pubs_cmdvel = self.create_publisher(Twist, 'cmd_vel', 1)
27
28         # vehicle parameters
29         self.speed = 0.2
30         self.angle_correction = 0.01
31
32         # Initialize parameters
33         self.qs_right = self.qs_mid = self.qs_left = 0, 0, 0
34         self.delta5 = 0
35         self.cmd = Twist()
36         self.stop = False
37         self.count = 0
38         self.count_threshold = 10
39
40     def right_IR_cb(self, msg):
41         self.qs_right = msg
42
43     def left_IR_cb(self, msg):
44         self.qs_left = msg
45
46     def mid_IR_cb(self, msg):
47         self.qs_mid = msg
48
49     def mainargs(self):
50         pass
51
52 if __name__ == '__main__':
53     node = LineFollower()
```

4. Setelah mendapatkan data tersebut, kita kembali ke dalam file node line_following_launch.py yang bertugas untuk menyimpan direktori paket yang sudah dibuat pada langkah-langkah sebelumnya. Setelah itu, kita melakukan integrasi antara file line following ini dengan setup.py untuk memperkuat fungsionalitasnya.



```
1 #!/usr/bin/env python
2
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11 # distributed under the License is distributed on an "AS IS" BASIS,
12 # WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
13 # See the License for the specific language governing permissions and
14 # limitations under the License.
15
16 import os
17 from launch.substitutions import PathJoinSubstitution
18 from launch.actions import IncludeLaunchDescription
19 from launch.launch_description_sources import PythonLaunchDescriptionSource
20 from launch import LaunchDescription
21 from launch_index_python_packages import get_package_share_directory
22 from launch_ros.actions import Node
23
24
25 def generate_launch_description():
26     package_dir = get_package_share_directory('webots_ros2_tutorials')
27     core_dir = get_package_share_directory('webots_ros2_core')
28     webots = IncludeLaunchDescription(
29         PythonLaunchDescriptionSource(
30             os.path.join(core_dir, 'launch', 'robot_launch.py')
31         ),
32         launch_arguments=[
33             ('package', 'webots_ros2_tutorials'),
34             ('executable', 'enable_robot'),
35             ('world', PathJoinSubstitution([package_dir, 'worlds', 'custom_line_follower.world'])),
36         ]
37     )
38
39     line_follower = Node(
40         package='webots_ros2_tutorials',
41         executable='line_follower',
42         name='master_node'
43     )
44
45     return LaunchDescription([
46         webots,
47         line_follower
48     ])
49
50
51 if __name__ == '__main__':
52     main()
```

5. Pada tahap akhir, kita melakukan demonstrasi terhadap kode line following di Webots untuk menguji fungsionalitasnya.

