移动机器人_课程设计

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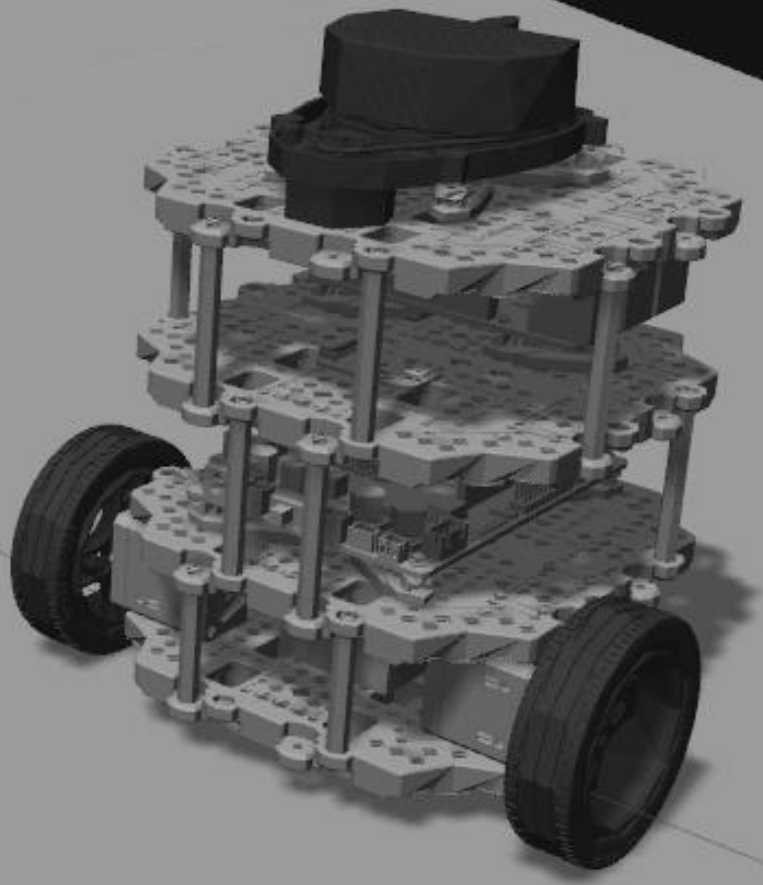
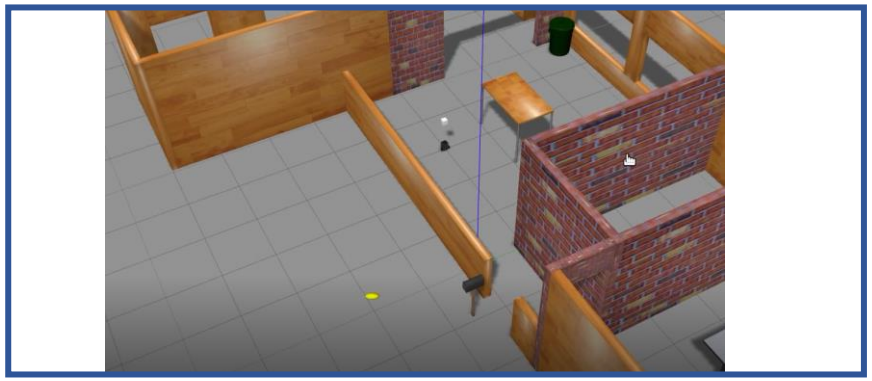


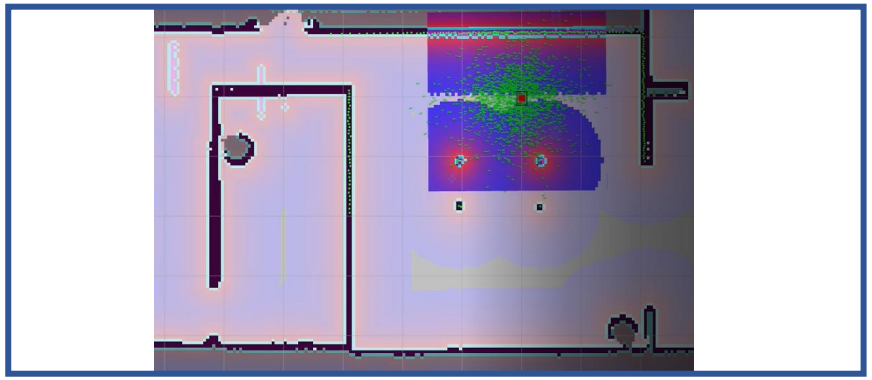
目的 地图构建/导航/语音指令/物体识别

仿真/地图构建/导航



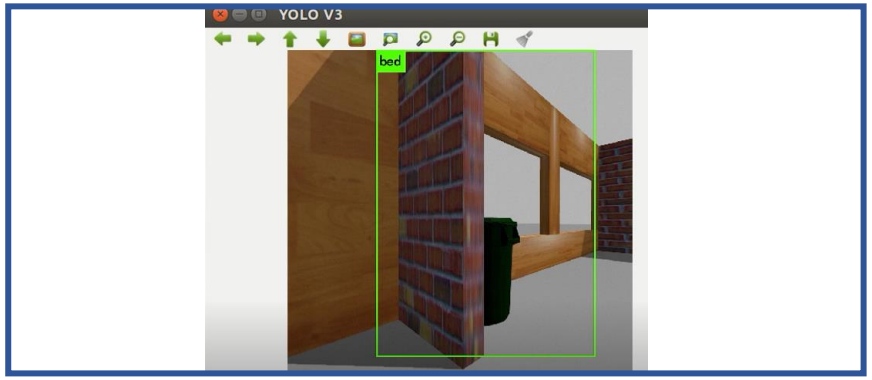
Gazebo/rviz + gmapping
+ Navigation stack

语音指令



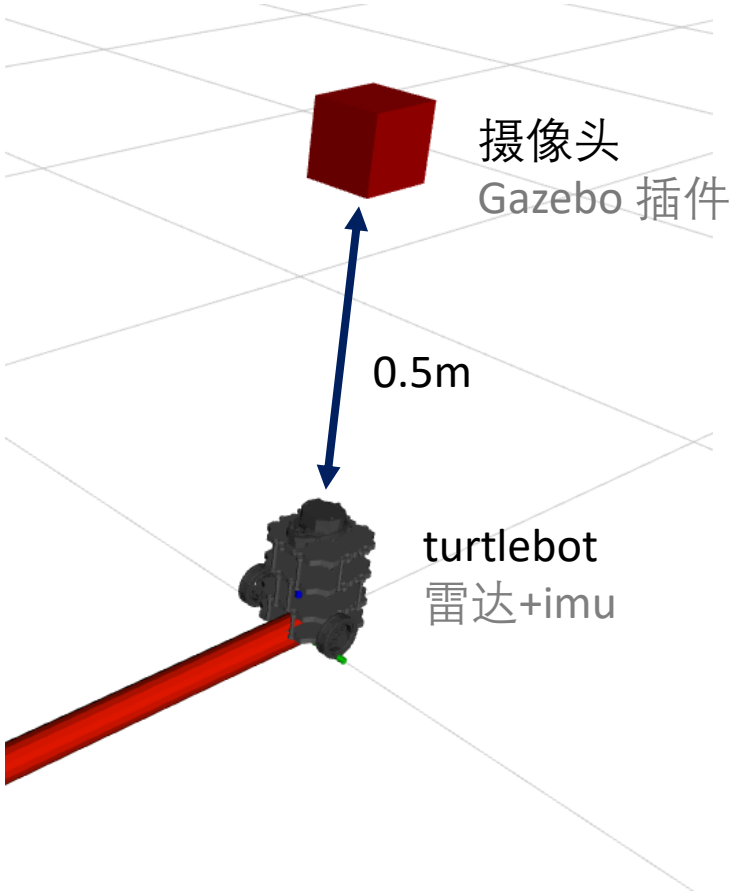
科大讯飞API

物体识别

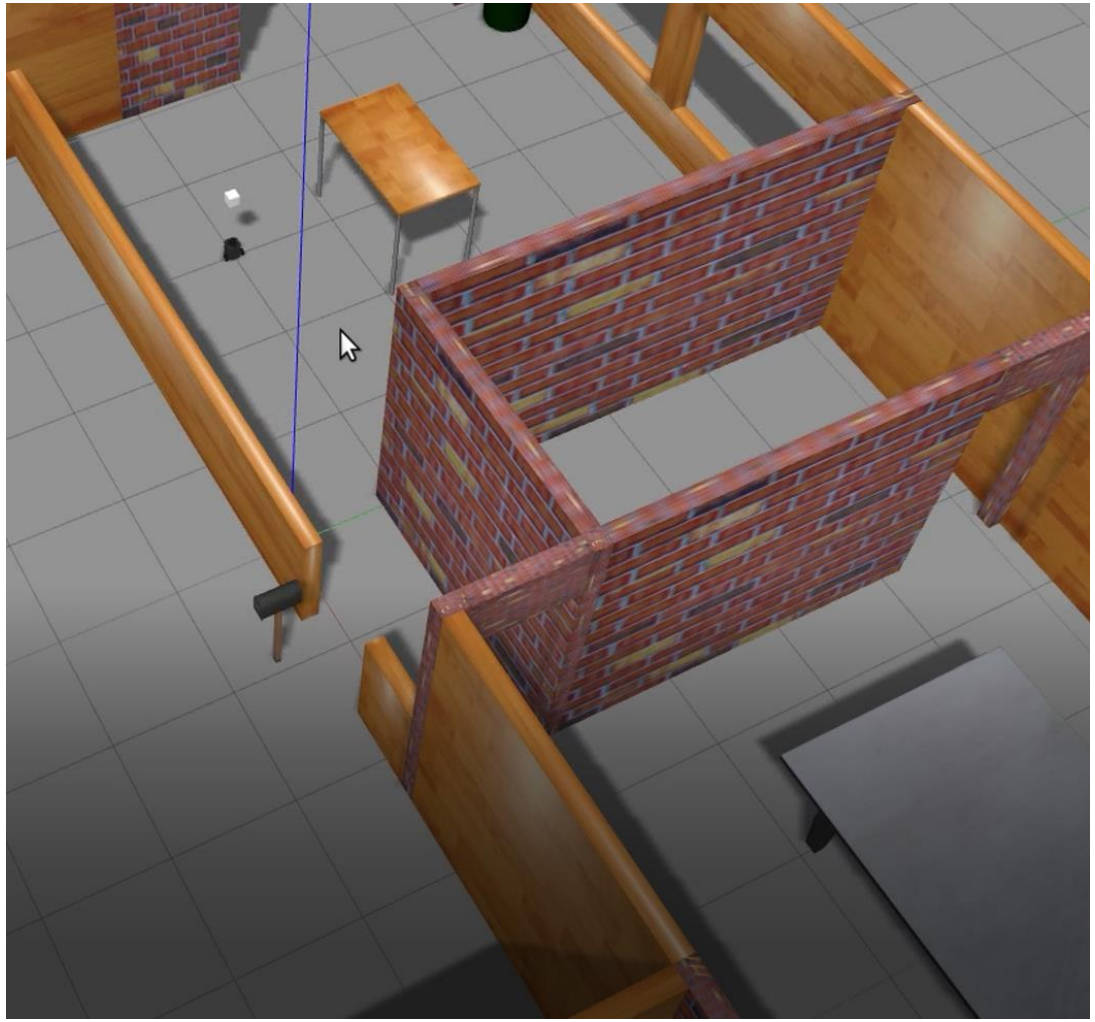


Darknet + yolo

机器人$_{burger}$ 仿真环境



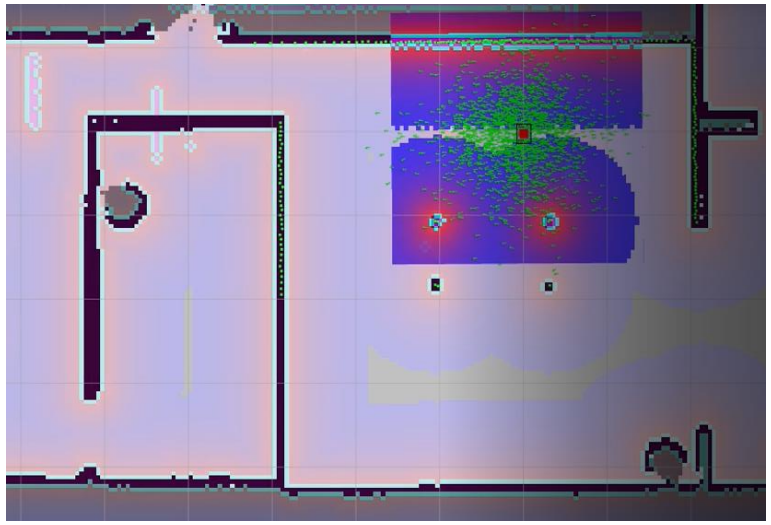
Gazebo house



建图/导航/目标点

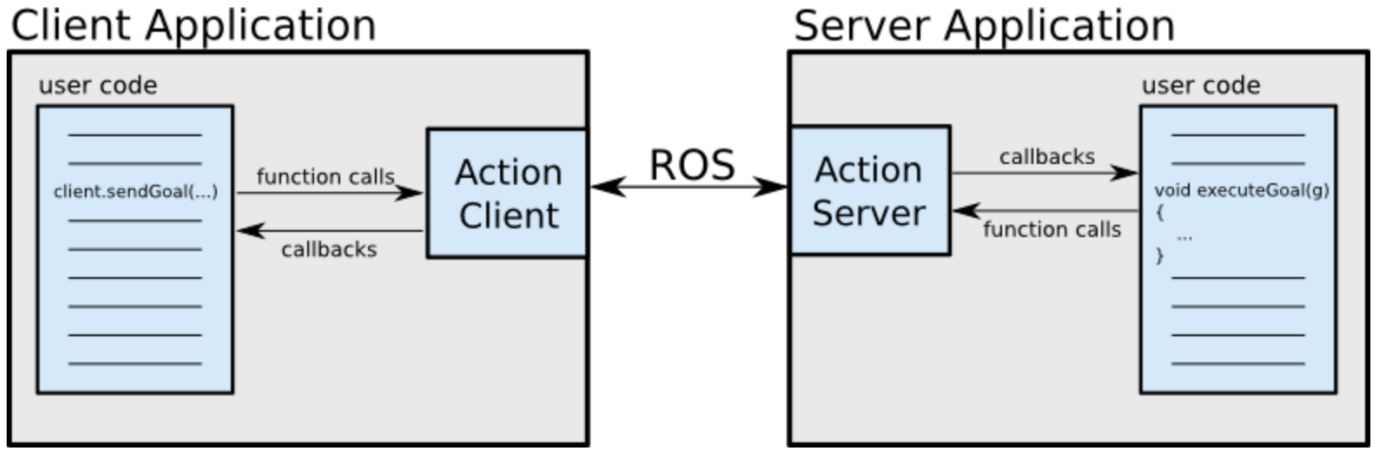
建图

Gmapping + keyboard ctr



导航

Action lib + Navigation stack



Action Specification: Goal, Feedback, & Result

msg

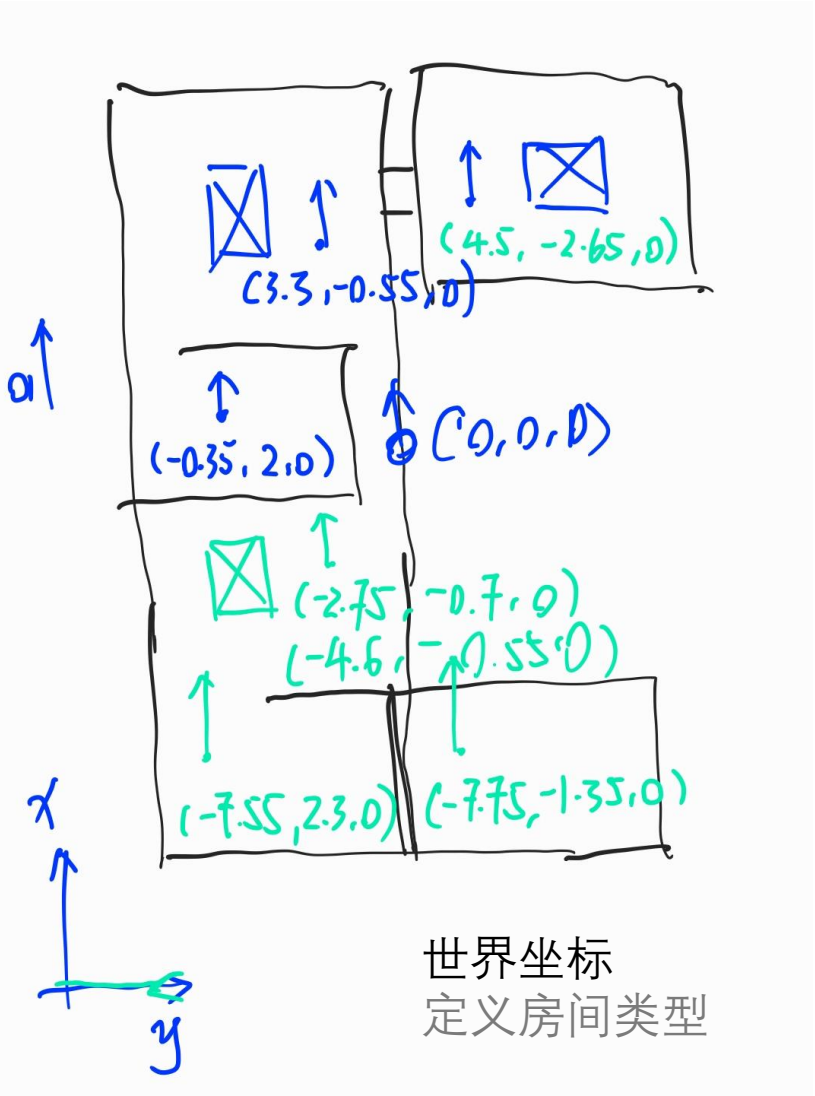
MovebaseGoal

geometry_msgs/PoseStamped target_pose
  Header header
    uint32 seq
    time stamp
    string frame_id
  geometry_msgs/Pose pose
    geometry_msgs/Point position
      float64 x
      float64 y
      float64 z
    geometry_msgs/Quaternion orientation
      float64 x
      float64 y
      float64 z
      float64 w

语音目标科大讯飞API

sub
Xfwake ->唤醒录音

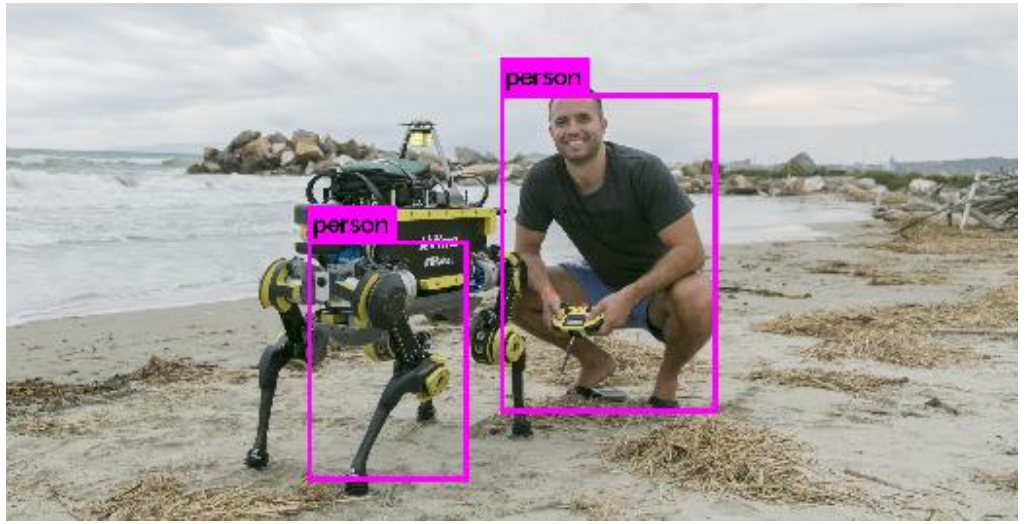
pub
Xfspeech ->识别unicode码



世界坐标
定义房间类型

目标识别ETH darknet_ros pkg

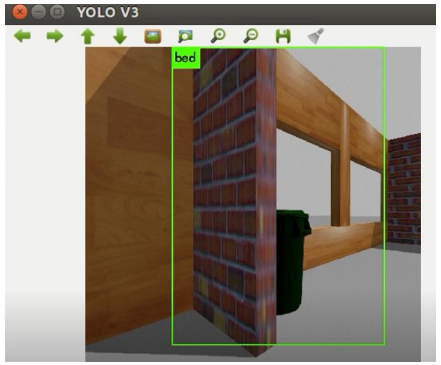
https://github.com/leggedrobotics/darknet_ros

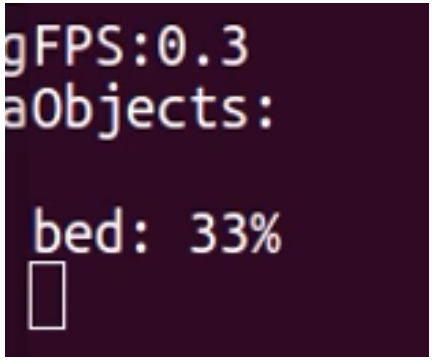


sub
/cam/image_raw ->gazebo虚拟摄像头

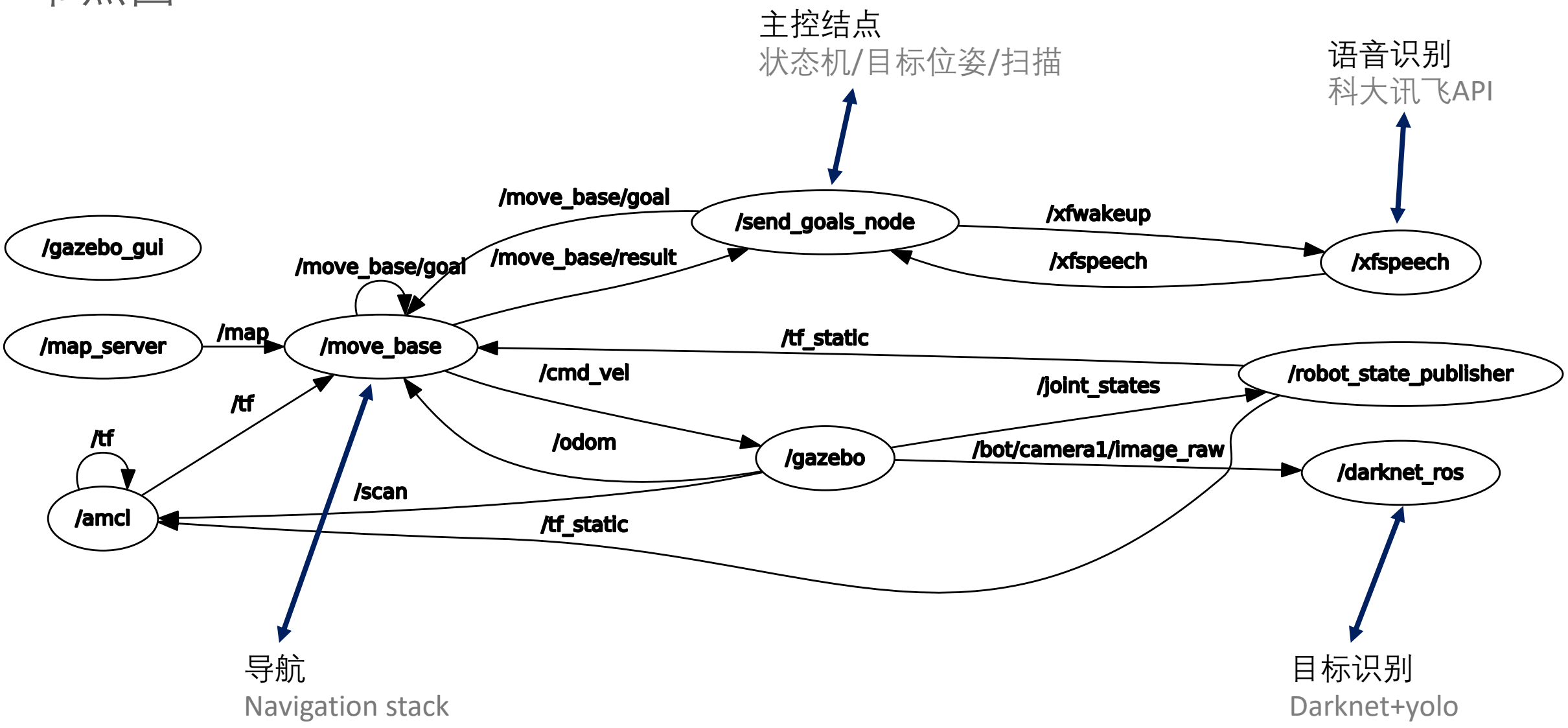
pub
Boundboxes ->识别框

目标位置分区旋转扫描





节点图


主控结点
状态机/目标位姿/扫描
语音识别
科大讯飞API
/send_goals_node
/xfwakeup
/xfspeech
/xfspeech
/move_base/goal
/move_base/result
/move_base/goal
/gazebo_gui
/map_server
/map
/move_base
/tf_static
/robot_state_publisher
/cmd_vel
/joint_states
/tf
/tf
/odom
/gazebo
/bot/camera1/image_raw
/darknet_ros
/scan
/amcl
/tf_static
导航
Navigation stack
目标识别
Darknet+yolo

存在的问题

? 目标识别率

受限硬件性能，使用yolo_tiny.weights

摄像头->渲染环境与真实环境的差别

? 物体位置确定

单目 只确定机器人位姿，物体方向

双目或深度摄像头?

? 更完整的语音指令控制

谢谢