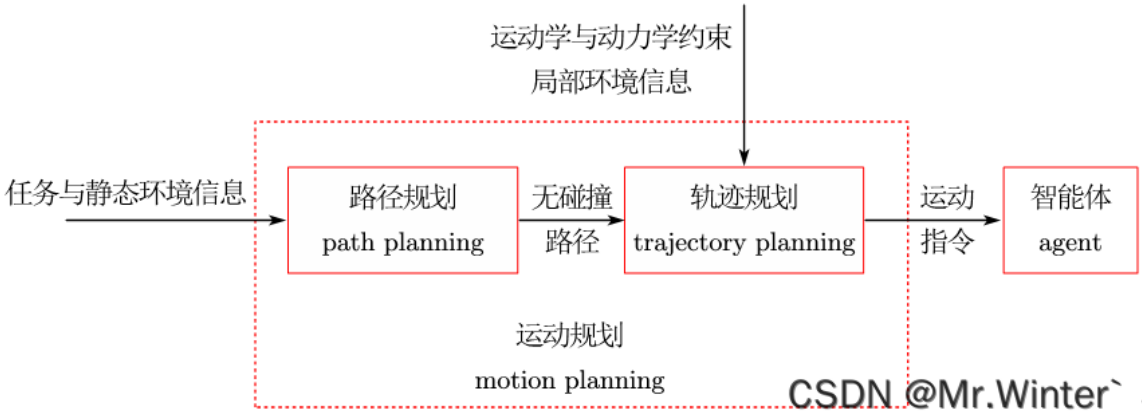
AUV 控制框架

参考自动驾驶：



总共分 3 步：

1. 最外层：根据任务与环境信息生成参考路径
2. 第二层：根据参考路径、当前位置、当前状态以及约束生成参考轨迹
3. 第三层：根据参考轨迹对设备进行控制。

在《AUVTrajectory Tracking Models and Control Strategies》中，AUV 控制框架如下所示：

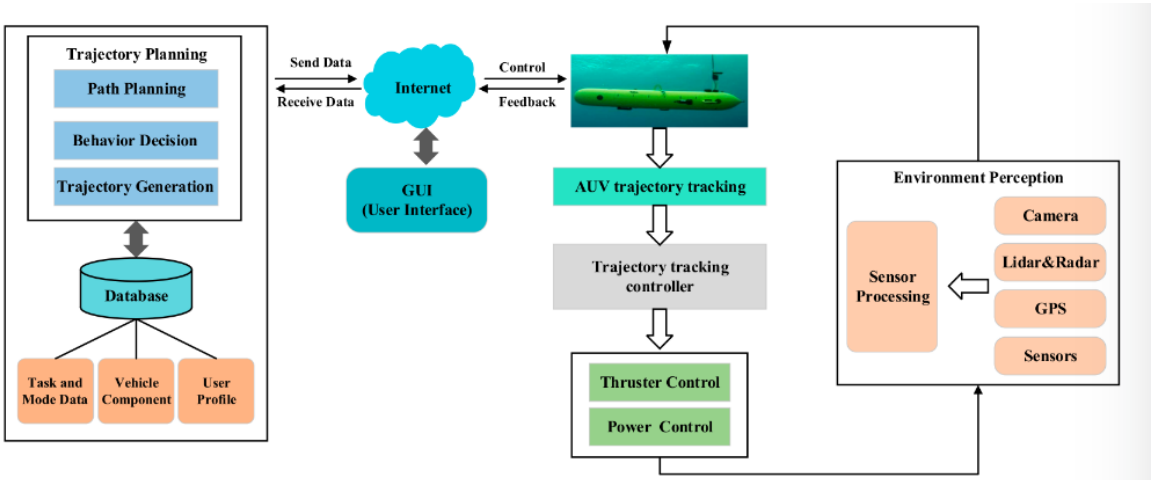


Figure 1. AUV trajectory tracking structure block diagram.

与车辆的自动驾驶类似，多了一个图形化界面（GUI），并且路径规划和轨迹规划是在远端计算机在线完成的，需要建立网络通信。

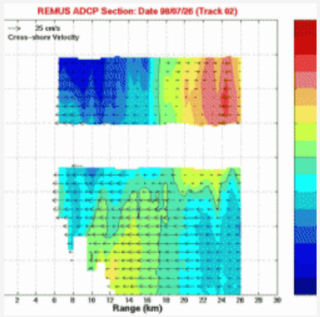
REMUS100 参数（传感器）

THE REMUS 100 - Oceantech

市面上的 AUV 直接售卖封装好的传感器，可以选装到 AUV 上。

Phased Array Doppler Velocity Log (DVL) – 300 kHz – Vehicle navigation +

- Vehicle velocity
- Water current velocity (flow & current)
- Vehicle position from surface and bottom
- Depth
- Obstacle avoidance
- Terrain following
- Dead Reckoning of route travelled



相控阵多普勒速度测数（DVL）：速度、洋流速度、AUV距离海面和海底的位置、深度、避障功能、地形跟踪功能、行进路线的航位推算

iXblue C3 IMU w/ NavP Vehicle navigation +

- Inertial navigation for survey grade navigation
- iXblue's silent true solid state Fiber-Optic Gyroscope technology built-in
- The Kongsberg Maritime NavP aided inertial navigation system built-in
- Precise, reliable acoustic positioning

MORE INFORMATION

用于测量级导航的惯性导航、iXblue内置静音真固态光纤陀螺仪技术、内置 Kongsberg Maritime NavP 辅助惯性导航系统、精确、可靠的声学定位

Wetlabs Triplet ECO Puck

The Triplet is a special-order, three-optical-sensor instrument available in a user-defined configuration. The Triplet addresses the need for multiple simultaneous scattering and fluorescence sensors for autonomous and unattended measurement platforms.

The sensor is primarily used to measure Turbidity & Fluorescence. The sensor is customised at build, capable of: one scattering, two fluorometers; two scattering, one fluorometer; three fluorometer or three scattering measurements. Options include:

- Blue scattering
- Green scattering
- Red scattering
- Chlorophyll fluorescence
- CDOM fluorescence
- Phycoerythrin fluorescence
- Phycocyanin fluorescence
- Rhodamine fluorescence
- Uranine (fluorescein) fluorescence

MORE INFORMATION

光学传感器，用于探测水质等等。

还可以选装更多功能的传感器。

总之算法设计需要用到的变量，都可以使用传感器测算得到。