REMO I is a remotely teleoperated underwater vehicle developed for measuring and observing maritime environments. This robot has been based on a parallel structure (Stewart-Gough platform), with the capability of changing its geometry in order to facilitate the navigation within complex maneuvers. Orientation and propulsion systems can change in order to provide even more underwater dexterity. A thruster located in the back of its structure, which drives the vehicle forward, composes the main propulsion system of the robot. For example REMO I can navigate in one direction and turn fast in the opposite direction with a constant velocity. When we have two forces in ninety degrees they exist a pure torque that generate this change of direction.

Reference to key publications:


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REMO II is an underwater robot based on a Stewart-Gough (SG) parallel mechanism. This parallel structure is a 6 DoF mechanism, composed of 2 platforms connected by 6 linear actuators using spherical and universal joints. Its vector navigation system is composed by 2 thrusters and 1 control moments gyroscope (CMG). The thrusters are placed on each rings respectively, and generate linear forces. The control of the relative position and orientation of the platforms of the SG mechanism, allows the generation of a controlled resultant force.

The CMG System is composed of 4 controlled gyro-scope with pyramidal configuration, mounted over one of the platform of the SG mechanism. It can generate a resultant force (depending of the velocity and orientation of each gyroscope), that compensate the torque produced by the forces of navigation, thus improving the manoeuvrability of the robot.

Reference to key publications:

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In this picture we can see a 6DoF parallel joystick control device based on the same parallel mechanism that REMO I & II (6 DoF Stewart-Gough parallel mechanism) in order to facilitate the teleoperation of this kind of underwater robots. This makes it possible to apply the principle of vector navigation thrusting that we described above. It is possible also the teleoperation of any other device up to six degrees of freedom.

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