ANYmotion

Enhancing the interaction skills and mobility of robots
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In today’s world, the ability of robots to interact with humans and objects in the environment is still very limited. Truly dynamic interactions are hardly possible because interaction forces cannot be accurately controlled. Also, for the same reason, robot mobility is typically restricted to a delimited working area, except for some simple and slow household devices. Since mobile robots are usually wheel based, mobility is additionally limited to unobstructed and even terrain.

The next major step in robot evolution will see robots leaving the structured factory environment. This requires versatile and highly mobile mechanical devices to move and operate autonomously in unstructured environments, collaborating with humans where needed. As a consequence, robot capabilities need to be massively improved in three areas:

- mobility to cope with obstacles, steps or gaps, and rough, natural terrain with difficult ground conditions
- interaction with controlled forces, allowing for highly dynamic but safe contact with the environment
- autonomy for service missions such as inspection, transportation or intervention

At Wyss Zurich, the ANYmotion team is addressing these challenges by developing a set of three closely related products, each one providing its unique customer benefits for a wealth of robot applications:

- the mobile robot system ANYmal, an electrically driven four-legged autonomous robot platform satisfying the most advanced mobility requirements
- the robot joint ANYdrive, a compliant electric actuator unit with all necessary sensors and intelligence integrated in a compact lightweight device to satisfy the most advanced motion and force control requirements for any robot-like device
- the mobile robot’s brain ANYbalance, a balancing control software that optimally distributes ground contact forces and thereby maximizes stability and safety of any legged or wheeled active suspension system operating in rough terrain.