Data-driven modelling and control of flexible Cobots

Cobots are robots that are specifically designed to collaborate with humans. Safety is an important point of attention for this type of robots. Traditional industrial robots are designed with a high stiffness, which makes it possible to accurately calculate the state of the end-effector using the knowledge of the joint angles and speeds. However, this results in heavy robots with high inertia, which can lead to serious injuries in the case of an impact between the robot and a human. When the manipulator is designed with a lower stiffness, and thus allowing the structure to deflect, a considerable drop in mass can be reached. Given the combination of their lightweightness and flexible aspect, flexible link robots are interesting for applications in human-robot collaboration. However, flexible links come with an additional challenge to control them. The dynamic behaviour of the robot becomes very dependent on the load to be manipulated.

Cobots have been designed (and will be further optimised) by the Robotics and multibody mechanics group of the VUB. Will you take the challenge to use data-driven modelling to describe the dynamic behaviour of these robots, and to help design optimal control strategies to obtain accurate end effector tracking?

Interested? Do not hesitate to contact us for more information.

Promotors: John Lataire, Greet Van de Perre
John.Lataire@vub.be, greet.van.de.perre@vub.be

Advisors: John Lataire, Greet Van de Perre, Thierry Hubert (Thierry.Rene.Hubert@vub.be)