It is possible - though difficult - to draw a picture of what could be the state-of-the-art of neurophysiology and neuroprosthetics, 10 years forward from now. But while talking about breakthroughs in our discipline, we must interrogate which kind of spectacular outcomes we are expecting : will it be new fundamental understandings of the organization and mechanisms of specific subsets of neurons driving such or such motor action ? Developments of new electrical stimulation and recording paradigms further enhancing the abilities of impaired patients ? Or large-scale spreading of economically affordable and clinically approved devices for the daily use of people suffering from neurologic disorders ?

However, simply trying to predict the future - just as being optimistic or pessimistic about the result of a football game - is a spectator attitude. On the contrary, when you are a player on the field, you get prepared for the challenges to overcome and struggle to shape the future which you want to build.

In my opinion, research in therapeutic strategies for alleviating the consequences of tetraplegia following a spinal cord injury, not only is crucial for the patients and for unloading society with the cost that it represents, but is also offering a wide space for achieving significant progress.

As was recently reported in a study on locomotion (ref), the mechanistic understanding of the interaction of epidural electric stimulation and the lumbar spinal circuits of the rat allowed the development of a closed-loop system enabling a subject-specific correction of gait and balance during locomotion.

Comparable findings and paradigms developments for the upper-limb are yet to come. The unraveling of the cervical spinal cord mechanisms to control arm movements could lead the way to clinical applications positively and critically improving the patients’ everyday lives.

I think that the development of new computational frameworks – to which I will dedicate the next four years as a PhD student - will contribute to the major