

## Smart tyres: development of algorithms for the identification of soft soil (thesis@POLIMI, refer to Prof. Stefano Melzi or Prof. Edoardo Sabbioni)

Smart tyres are special tyres provided with sensors; they collect information about the tyre-road interaction during operation. Such information is related to contact forces, friction coefficient, road texture, and contact patch shape. For the specific research, tyres are equipped with accelerometers glued on the inner liner. The activity aims to develop new algorithms or strategies to detect deformable (soft) surfaces beneath the tyre footprint. The main focus of the activity concerns the detection of different forms of snow: melted, compact, and iced snow. Experimental data collected during winter tests will be provided for algorithm development and verification. Algorithms should exploit the signals recorded by smart tires and others collected through the vehicle's standard measurement set-up. Moreover, the development process could take advantage of AI approaches and methodologies, widely used today for the modelling and analysis of complex systems.

The activity is in cooperation with an industrial partner. Periodic meetings and presentations with them will be scheduled during the work.