In 2011, we started a multidisciplinary project, named GAIMS, to analyse and interpret the gait of people with multiple sclerosis (MS). Measuring their gait is important because most of them have walking impairments since the early stages of the disease, and perceive it as the most disabling symptom [8]. The gait plays an important role for showing there is no evidence of disease activity [9], as well as for evaluating the efficacy of therapies.

GAIMS measures the trajectories of the lower limbs extremities and derives many gait characteristics from them [1]. The system GAIMS is non-intrusive, in the sense that it is contactless and that its usage does not impact on the gait characteristics. The system is well suited for the clinical routine because there is no need to equip the observed person with sensors or markers. It avoids the use of a treadmill, allows to analyse the gait both during straight lines and turns, and to analyze long walking tests, therefore allowing for an analysis of the motor fatigability [10].

Measuring the trajectories of the lower limbs extremities is sufficient, as demonstrated that GAIMS measures an important quantity of information about the state of the patient, which is done with an adequate accuracy. In particular, GAIMS is able, with the help of machine learning techniques, to better detect ataxia than gait disorder specialists [11], and to detect when ataxia is increased between two successive visits of the same patient [12]. Moreover, it is possible to derive scores based on objective and quantitative measures of the gait that are well correlated with the subjective scale used by neurologists [13]. Finally, GAIMS has been able to detect significant differences between healthy people, and different disability levels groups of people with MS [14].

**References**


**Figures**

Figure 1: GAIMS measures an important quantity of information about the state of the patient, which is done with an adequate accuracy. In particular, GAIMS is able, with the help of machine learning techniques, to better detect ataxia than gait disorder specialists [11], and to detect when ataxia is increased between two successive visits of the same patient [12]. Moreover, it is possible to derive scores based on objective and quantitative measures of the gait that are well correlated with the subjective scale used by neurologists [13]. Finally, GAIMS has been able to detect significant differences between healthy people, and different disability levels groups of people with MS [14].

**Acknowledgements.** We are grateful to the volunteers involved in the project GAIMS, to the Walloon region of Belgium (www.wallonie.be) for partly funding it, and to BEA (www.bea.be) for the sensors. Samir Azrour is supported by a research fellowship of the Belgian National Fund for Scientific Research (www.fnrs.be).