to be defined

1 Context

The beginning of XXIth century sees a drastic increase of applications coming as an assistance to numerous human activities, among which medicine is one of the main domains. And the use of technology to the healthcare system is the focus today, with technologies ranging from robots to assist in surgery to gadgets that measure sugar levels and help diabetic people. Among those areas, an important one deals with pain, which is a complex subject to master. The main objectives will consist in being able to properly measure pain levels is of a great importance, as it will help medical doctors to provide a precise treatment and also allow pharmaceutical companies to have a better feedback for the development of treatments, the last being pharmaceutical or not. But pain assessment is not a simple task and has been a challenge even for humans. Many scales and methods have been created to tackle such a problem [3, 4, 5, 6, 7, 8] with limited efficiency. It is still so far difficult to have an accurate assessment of pain, notably chronic pain. As a matter of fact, as pain is a subjective feeling, the most used measurement is the auto evaluation, but even if it gives fairly acceptable results, it still falls short on some aspects like simulated pain [1], or, most commonly, when the patient has difficulties to communicate, as is the case of infants and some elderly people [2]. And the creation of a method capable of assessing precisely the level of pain felt by patients can help the present diagnosis system overcome a complicated barrier.

1.1 state of the art

- talk about the Pittsburgh research
- talk about the Aalborg research

1.2 methodological approach

- talk about the use of human knowledge similar to the expert system (one of the ai winters sensitive topic)
- using not just image bu also natural language and sound analyses.

2 objectives

2.1 expected results

- get a pain assessment on a precise level

2.2 scientific and technological challenges

- to be discussed with Lepetit

3 organization

3.1 general organization

3.2 planning

- T0 + 6 months: gathering and study of the data
- T0 + 12 months: assessment based on the facial expression
- T0 + 18 months: assessment of emotions from natural language analyses
- T0 + 24 months: assessment by combining the 2 methods
- T0 + 30 months: formalization, validations publications and theses
- T0 + 36 months: theses and defense

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