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SLEEP MONITORING

Abstract

Sleep is vital in any environment, whether that be on Earth or in space. Analysing sleep and trying to improve sleep quality is an interesting concept that leads to higher performance output from human beings. In 2016 the National Sleep Foundation concluded that 3 percent of adult Americans (7 million individuals) had fallen asleep at the wheel of a car in the two weeks leading up to the survey. It is well documented that sleeping in space is far more difficult when compared to sleeping on Earth. Therefore the necessity to improve sleep quality for astronauts, so to ensure high physical and cognitive function, is crucial especially considering the dangers associated with space travel/flight. We have developed a 'Smart' blanket using a Raspberry Pi and off the shelf sensors to monitor the movement, temperature and light intensity from a user who is asleep. This system was originally intended to alert hospital staff before children experienced nocturnal enuresis (involuntary urination during sleep) which can be psychologically damaging. But the sensor system could easily be adapted to monitor other factors such as oxygen saturation, audio levels and other relevant quantities regarding space sleep analysis.