***Abstract***

***Sleep is not just a passive process happen by the body. Everyone has different state of sleep at night. The process during sleep is divided into two parts, Rapid Eye Movement (REM) and Non-Rapid Eye Movement (NREM). The system consists of LCD LED display, real-time clock unit (RTC), passive infrared, buzzer, Wi-Fi module, and Wemos D1 Microcontroller. The system uses passive infrared sensors (PIRs) to detect body movement when humans are sleeping, which will then be calculated using the sleep phase detection algorithm to find the Hypnagogia phase (light sleep phase or almost waking state) indicated by sudden body movement during sleep or change of position during sleep. With this smart alarm clock system is expected to detect sleep phases and adjust alarm time to the best possible moment based on their hypnagogic sleep phase. Awaking in these states is quite better and people feel much more refreshed. The success rate of wake up using smart alarm at 85.71%.***

**Keyword: REM, NREM,** ***passive infrared, alarm, hypnagogia,*** **wemos d1**