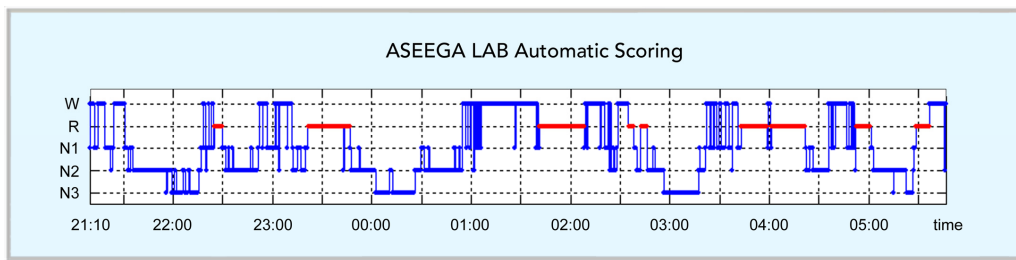


Aseega Lab

Sleep Diagnostic-Aid Software



Saving expert time.

- Fast scoring aid
- Unsupervised

Clinically validated

Highly reliable

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Physiological Signal Processing Research

Overview

- Automatic AASM compliant hypnogram (5 mins)
- Reduces clinician/technician workload
- At a glance all-night sleep preview
- Only rapid over-reading required



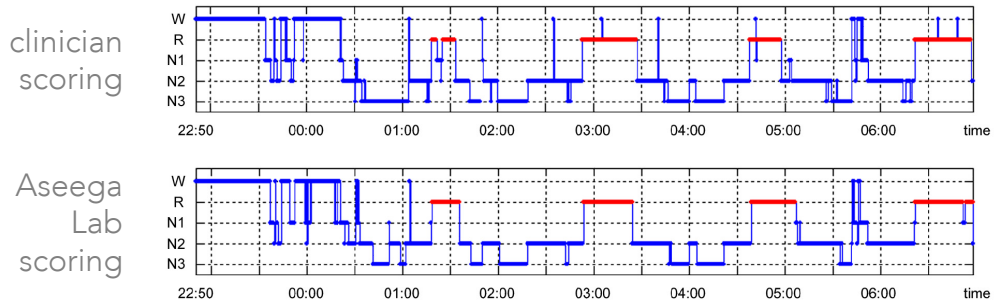
- Fast scoring-aid tool
- Auto-tuning of analysis criteria
- Based on 35 years of research

Applications

- Polysomnography (PSG) studies
- Sleep polygraphy (PG) studies with an EEG add-on

Aseega technology

Aseega autoadaptive algorithm combines multiple advanced signal processing technologies based on time-scale analysis and fuzzy logic. Aseega generates a hypnogram very close to the R&K one obtained by visual scoring, in a few minutes



Sleep studies

Aseega now used in sleep research

Science 2009 Apr 24; 324 (5926):516-9

Part of this neuroscience study involved sleep scoring. Aseega, used as a fully automated scoring tool, enabled the exclusion of a bias resulting from possible visual scoring subjectivity

Clinical validation on healthy subjects

Berthomier et al. *Automatic Analysis of Single-Channel Sleep EEG: Validation in Healthy Individuals.* *Sleep* 2007;30(11):1587-95

Scoring agreements	Wake / Sleep	: 96 %
	Wake / REM / NREM	: 92 %
	W / R / N1 / N2 / N3	: 83 %

Clinical validation on patients

Scoring agreements	Wake / Sleep	> 94 %
	Wake / REM / NREM	> 88 %

Journal of Sleep Research 2006;15(Suppl 1):P295

Studies on large volunteer cohort and on patients *in situ* underway

History

Aseega Technology is an extension of the work initiated by Odile Benoit and Jacques Prado (Le Roux 86, Bouard 86), who proposed a semi-automatic approach for the analysis of all-night sleep, based on a single EEG channel. At that time, this signal was recorded using a research prototype.

This semi-automatic method was routinely applied for 12 years by Benoit et al. to more than 500 recordings, including hypnotic pharmacological trials (Benoit 94, Daurat 97). Their work successfully demonstrated that scoring sleep from a single EEG channel is possible, although challenging.

This single channel method was used as a starting point for Christian Berthomier's PhD thesis in signal processing. His work, supervised by J. Prado in collaboration with Dr. O. Benoit, formed the basis of an automatic method to process sleep EEG recorded under laboratory conditions (Berthomier 99).

Since 2001, the research and development work carried out by the Physip Company, directed by C. Berthomier, has led to Aseega Technology. Aseega provides a fully automatic analysis of the EEG signal delivered by recording devices routinely used in sleep centers. The clinical validation of Aseega was successfully performed on 15 healthy subjects in 2005 and on 15 patients in 2006 (Berthomier 06, 07). The latest developments achieved real time scoring (Berthomier 08).

Aseega is now being used in sleep linked research domains (Schmidt 09, Van Beers 09).

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