

THE VIKING PROJECT

Veien til Kunstig Intelligens | Klinisk Nevrofysiologi

The VIKING project aims to establish the world's largest database of clinical neurophysiological data linked to diagnoses, procedures, metadata and clinical variables.

We are creating an open infrastructure database designed to facilitate research and development of AI-based clinical decision support systems.

OUR DATABASE:

In the VIKING project, we collect data from hospitals all across Norway, representing a diverse cohort of hundreds of thousands of patients. Our collaborating hospitals consist of 16 healthcare trusts (helseforetak), and we are in the process of including five more Norwegian hospitals with clinical neurophysiology practices. We collect data from all neurophysiology modalities.

The data is enriched by linkage to Norway's high-quality health registries. These registries provide insights into patient pathways and outcomes creating unique opportunities for AI development.

STRATEGY:

By harnessing health data and integrating diverse data sources, the VIKING project will leverage AI to develop machine-learning based models to:

- Recognize specific disease patterns in nerve conduction studies
- Classify measurements from electromyography, quantitative sensory testing and evoked potentials into normal and abnormal
- Automatically measure recorded evoked potentials
- Classify EEG measurements for both diagnostic and prognostic purposes



From the DIGMINE meeting in Trondheim, November 2025

GROUNDWORK AND MILESTONES REACHED:

- Established procedures and pipelines for extraction, transformation, and processing of data from a wide range of systems and file formats.
- Created standardized SQL databases for EMG and NCS data.
- Enabled access to EMG and NCS raw data/original examinations with waveforms and to associated tabular conclusions.
- Developed software for expert annotation of the data.
- Extracted historical EEG data from Oslo University Hospital (OUS) encompassing approximately 181,000 examinations.
- Ongoing extraction of historical EEG data from four healthcare trusts.
- Extracted EMG and NCS data from five healthcare trusts (~160,000 examinations), with extraction initiated at additional sites.
- Extracted procedure codes, diagnosis codes, clinical variables, etc. from Norsk Pasientregister, HEMIT, Helseplattformen and Regional Data- og Analyseplattform HSØ.

2026, THE WAY FORWARD:

- Annotate with the help of national registries and experts (including two specialists in clinical neurophysiology).
- Convert EEG datasets into standardized formats.
- Large-scale data extractions from collaborators, expanding the database substantially.
- Develop and train artificial intelligence models in the ENTRAPME and EPIC-AI projects, including the creation of foundation models intended to support the development and extension of novel AI-based solutions.
- Develop a common framework for data storage, data curation and annotation across Nordic countries

INTERESTED IN JOINING AS A COLLABORATOR?

We strongly encourage researchers, clinicians and industry interested in joining the project to contact us!

OUR COLLABORATORS:

- Research collaboration with NTNU, OsloMet and University of South-Eastern Norway. Topics for collaboration is AI-methodology, anonymization techniques, federated learning and more.
- International research collaboration with partners in the Netherlands, Sweden, Denmark and the US.
- Health trusts in the Northern, Central, Western and South-Eastern Regional Health Authorities (data sharing).
- The Norwegian Brain Council
- Norwegian Centre for E-health Research
- Industry: Neurolytix, Natus, Cadwell

FUNDING

South-Eastern, Western and Central Norway Regional Health Authorities

Stiftelsen DAM

Nasjonalt kompetansenettverk for personilpasset medisin

ON-GOING PROJECTS:

THE ENTRAPME PROJECT:

Aims to devise, validate and implement a machine-learning based clinical decision support system for diagnosing nerve entrapments. AI-based clinical decision support with pattern recognition can increase diagnostic efficiency and reduce the burden on neurophysiological expertise. The ENTRAPME project aims to reduce personnel costs for diagnosing entrapments by 20-30 %, constituting a large economic impact worldwide. In Norway alone, the project would impact at least 15-20 000 subjects each year. The project is funded by the South-Eastern Norway Regional Health Authority.

THE EPIC-AI PROJECT:

Enhancing Prognostication and Improving reliability of EEG assessments in Coma after Cardiac Arrest with Artificial Intelligence.

EPIC-AI is a research program funded by the South-Eastern Norway Regional Health Authority. The project aims to improve the reliability of EEG assessment for prognostication in coma after cardiac arrest. By standardizing reporting and building interpretable models, we want to make expert-level interpretation more consistent and available.



The VIKING team:

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