

Real-world applications of Artificial Intelligence in pre-dementia diagnostics and treatment administration



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Deep neural networks learn general and clinically relevant representations of the ageing brain

Deep neural networks learn general and clinically relevant representations of the ageing brain, Leonardsen et al., 2022. NeuroImage, 256, 119210

linked to cognitive performance in multiple domains. While further validations in clinical contexts are needed, our XAI pipeline for dementia demonstrates how advanced predictive technology can be employed by clinicians to monitor and characterize disease development for individual patients.














Constructing personalized characterizations of structural brain aberrations in patients with dementia using explainable artificial intelligence, Leonardsen et al., 2024. npj Digital Medicine, 7(1), 110


Background


estenhl

Merge pull request #26 from estenhl/packaging

7671d00 · 4 months ago · 123 Commits

 citations	Finished READMEs for now	9 months ago
 docker	Updated docker containers, small linting fixes, fixed bug ...	9 months ago
 notebooks	Updated docker containers, small linting fixes, fixed bug ...	9 months ago
 preprocessing	Finished models, pre/postprocessing and example from ...	10 months ago
 pymnt	Tried moving data folder (although I don't want to)	5 months ago
 scripts	Updated docker containers, small linting fixes, fixed bug ...	9 months ago
 tests	Removed redundant data folder	5 months ago
 .gitignore	More tests and comments, modified README	9 months ago
 CHANGELOG.md	More tests and comments, modified README	9 months ago
 LICENSE.md	Added license and citation	2 years ago
 README.md	Finished READMEs for now	9 months ago
 requirements.txt	Fixed docker containers	10 months ago
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 README


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This is a repository containing pretrained models for neuroimaging data used in various scientific publications. The publications are listed [here](#), and all the models are listed [here](#). After version 3.0.0 the nature of this repo changed, a description of which can be found in the [changelog](#). The models posted here try to mimic the behaviour and interface of the [pretrained models in the Keras applications package](#). Besides the possibility of importing this library in Python and interacting with the models as Python-objects, we demonstrate three use cases for interaction here:


- [Jupyter notebooks](#)
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<https://github.com/estenhl/pymnt-public>

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1. Showcase the **general efficacy** of artificial intelligence for demonstrative clinical use-cases

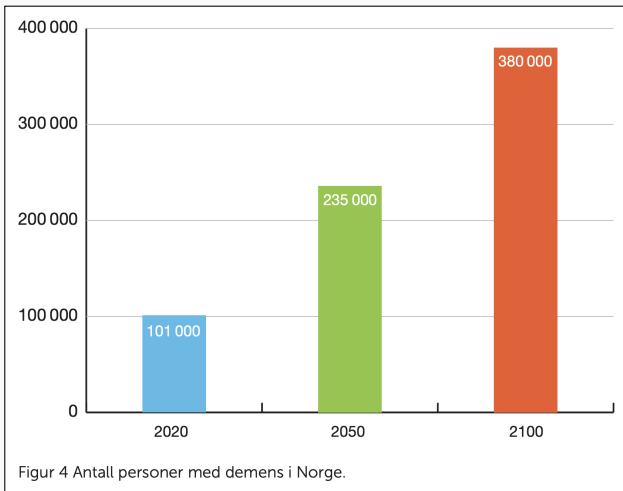
1. Showcase the **general efficacy** of artificial intelligence for demonstrative clinical use-cases
2. Build predictive models to solve specific **real-world clinical problems** using **commercially available data**
3. Ensure the **robustness and utility** of the models through extensive validation
4. Collaborate with clinicians to package the models in **user-friendly interfaces** integrating smoothly into **standardized clinical workflows**

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Decision support for neuroradiological examinations in dementia pre-diagnostics

Neuroradiological decision support



Radiology time spent

Subjectivity

Tool demo

Deep learning

New treatments

Treatment response prediction and monitoring of patients on anti-amyloid therapies

Treatment response and monitoring

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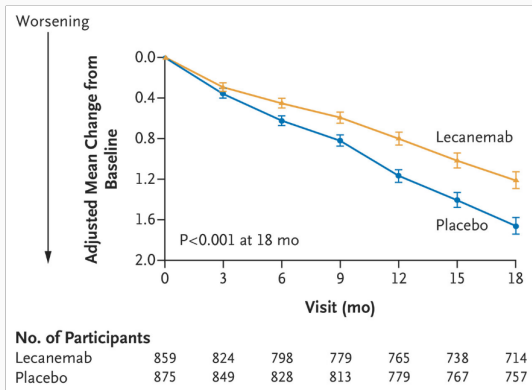
Leqembi recommended for treatment of early Alzheimer's disease

14 November 2024

[Re-examination](#) concludes that benefits outweigh risks in a restricted patient population

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Treatment response and monitoring





Thank you for your attention!

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