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

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Background

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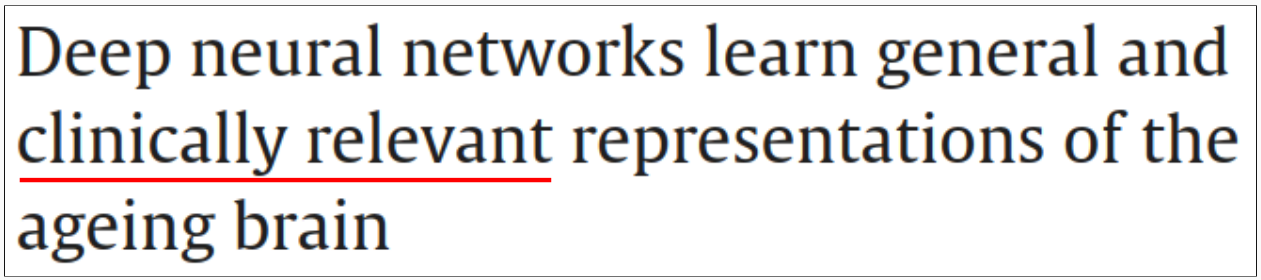
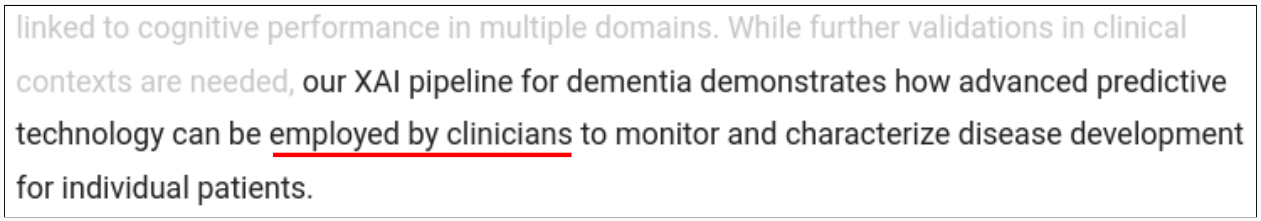


Deep neural networks learn general and clinically relevant representations of the ageing brain, Leonardsen et al., 2022. NeuroImage, 256, 119210



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

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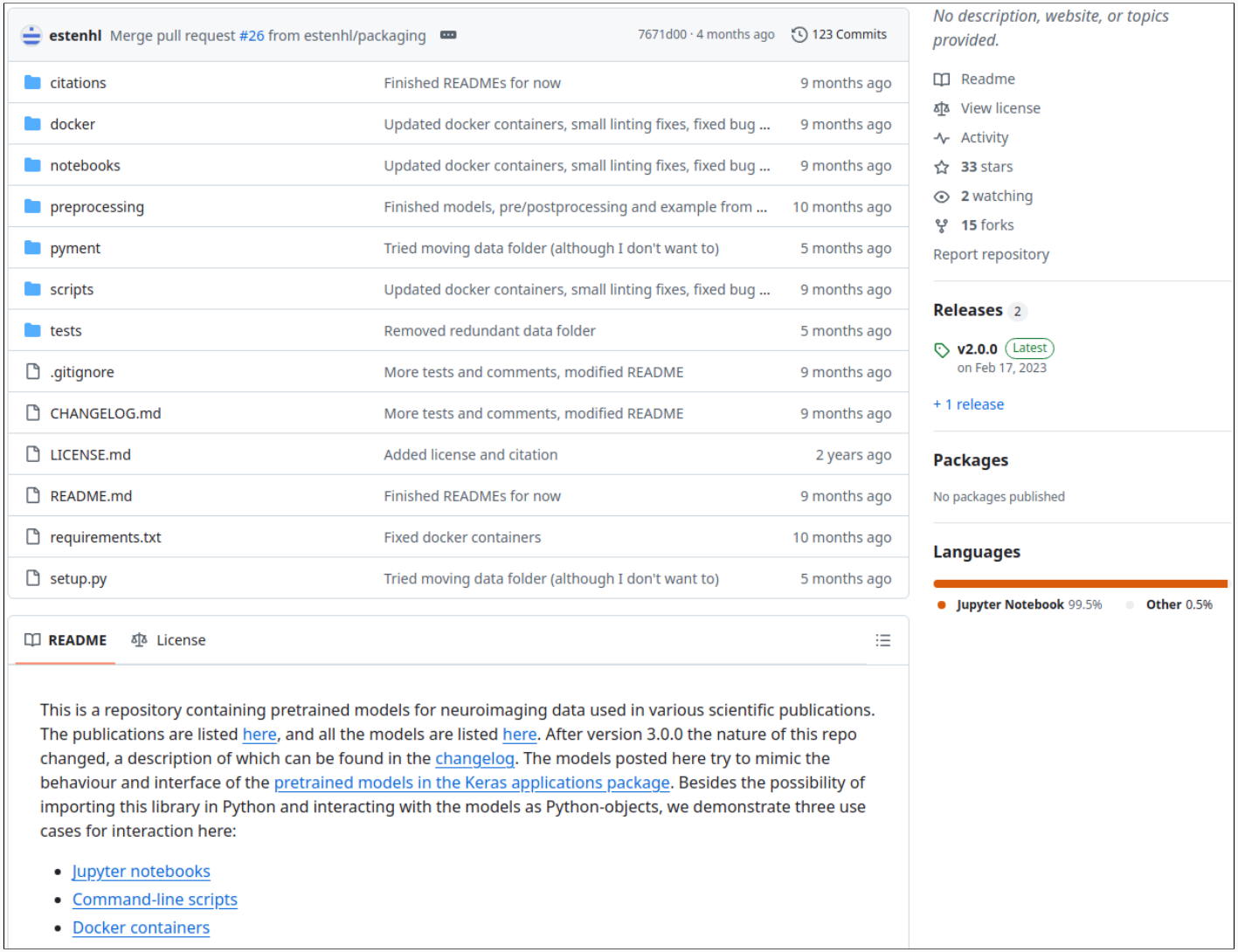

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README License

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
- Command-line scripts
- Docker containers

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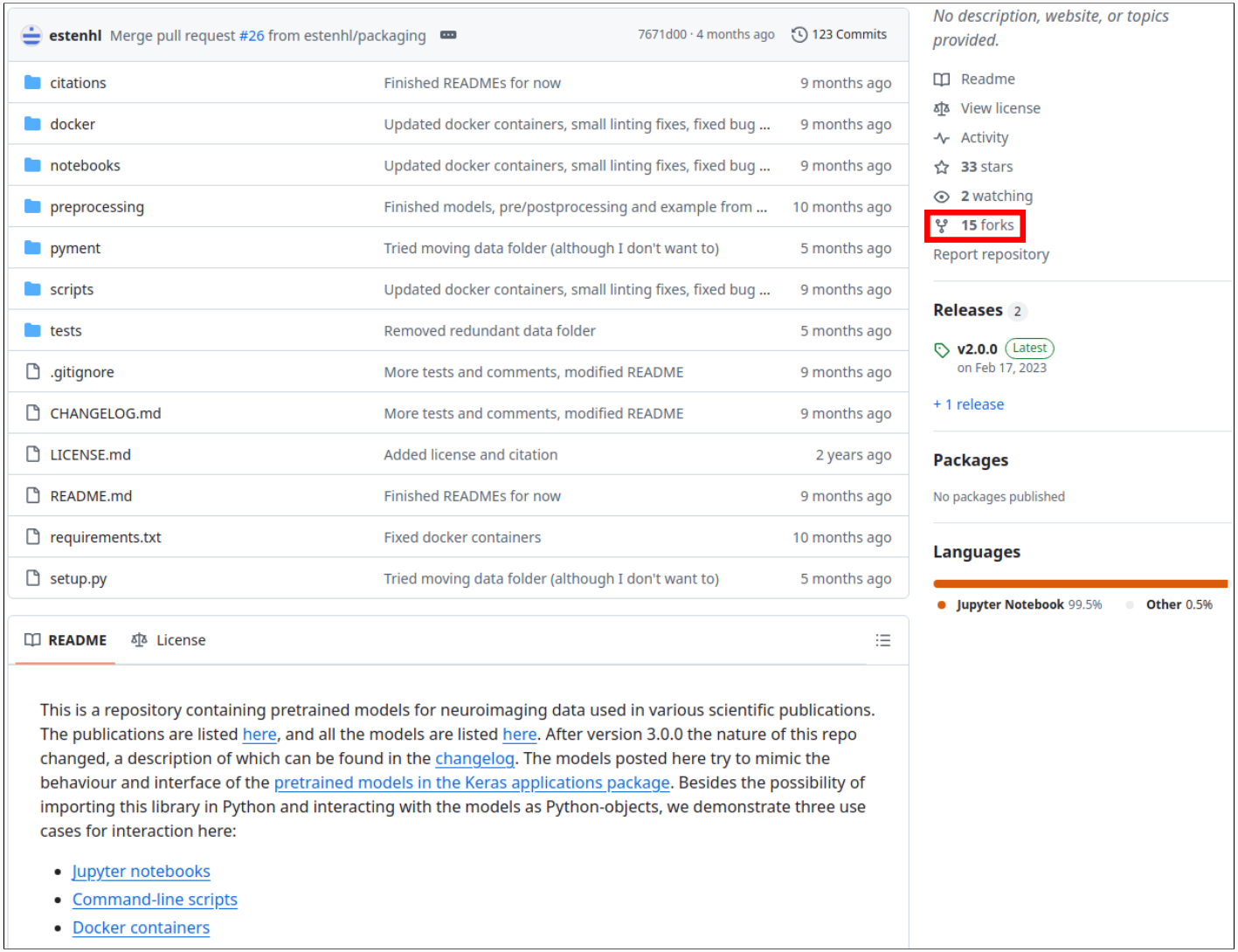
Languages

Jupyter Notebook 99.5% Other 0.5%

https://github.com/estenhl/pyment-public

Background



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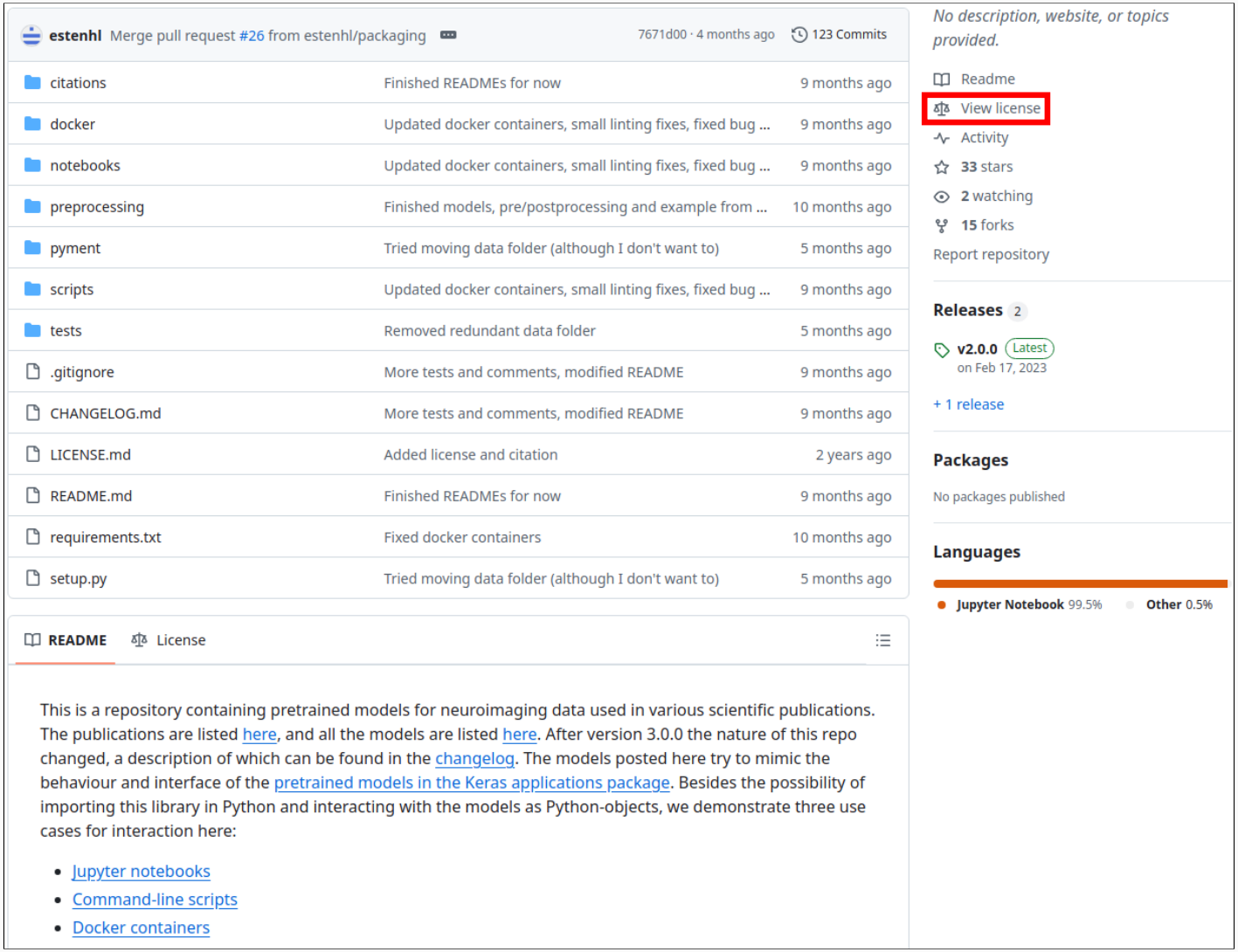

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1. Showcase the **general efficacy** of artificial intelligence for demonstrative clinical use-cases

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2. Build new predictive models to solve **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**

Background

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Decision support for neuroradiological examinations in dementia pre-diagnostics

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Neuroradiological decision support

Increase in prevalence

Neuroradiological decision support

Radiology time spent

Neuroradiological decision support

Subjectivity

Neuroradiological decision support

Tool demo

Neuroradiological decision support

Deep learning

Neuroradiological decision support

New treatments

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

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Treatment response and monitoring

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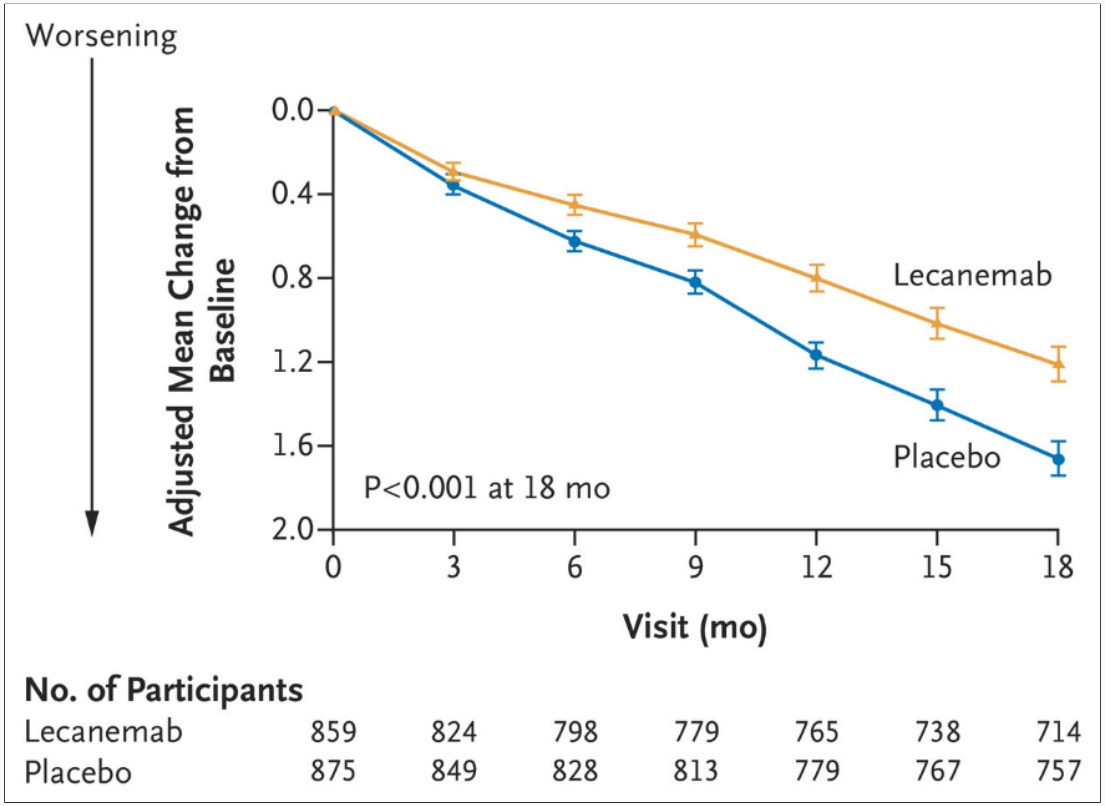

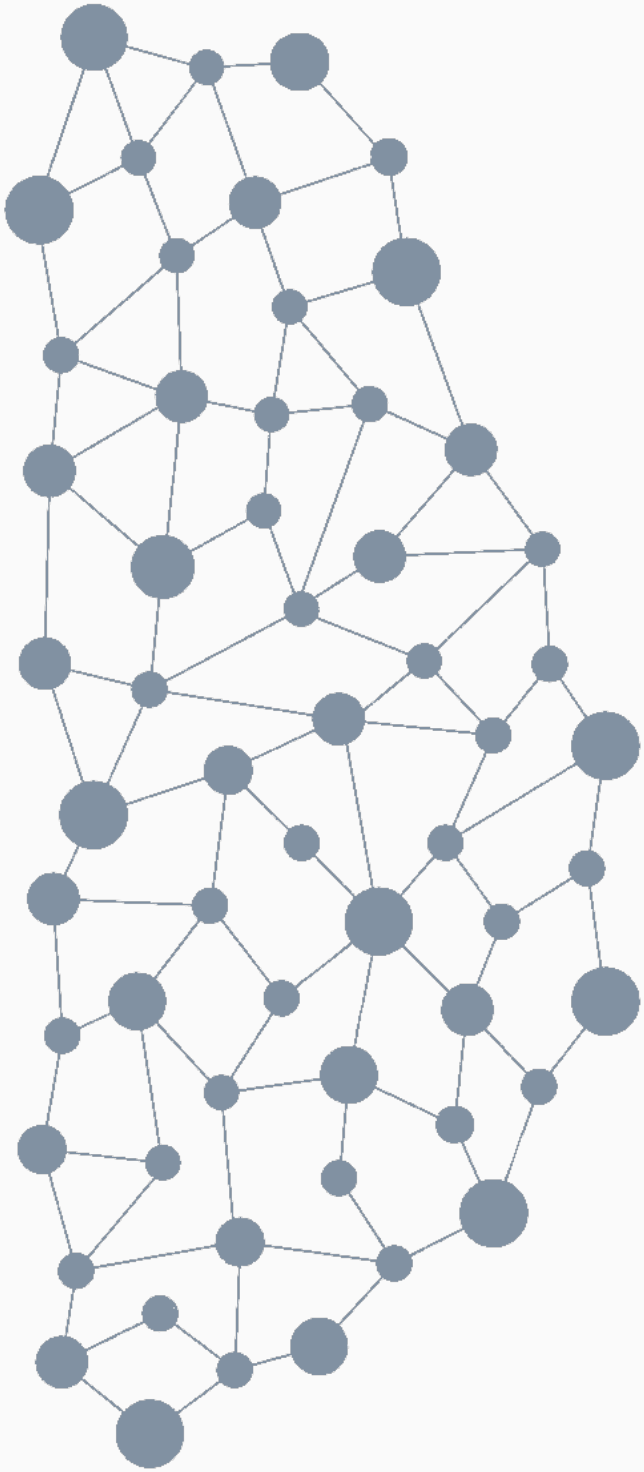

Thank you for your attention!

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