How Artificial Intelligence may shape Earth Sciences in next decades

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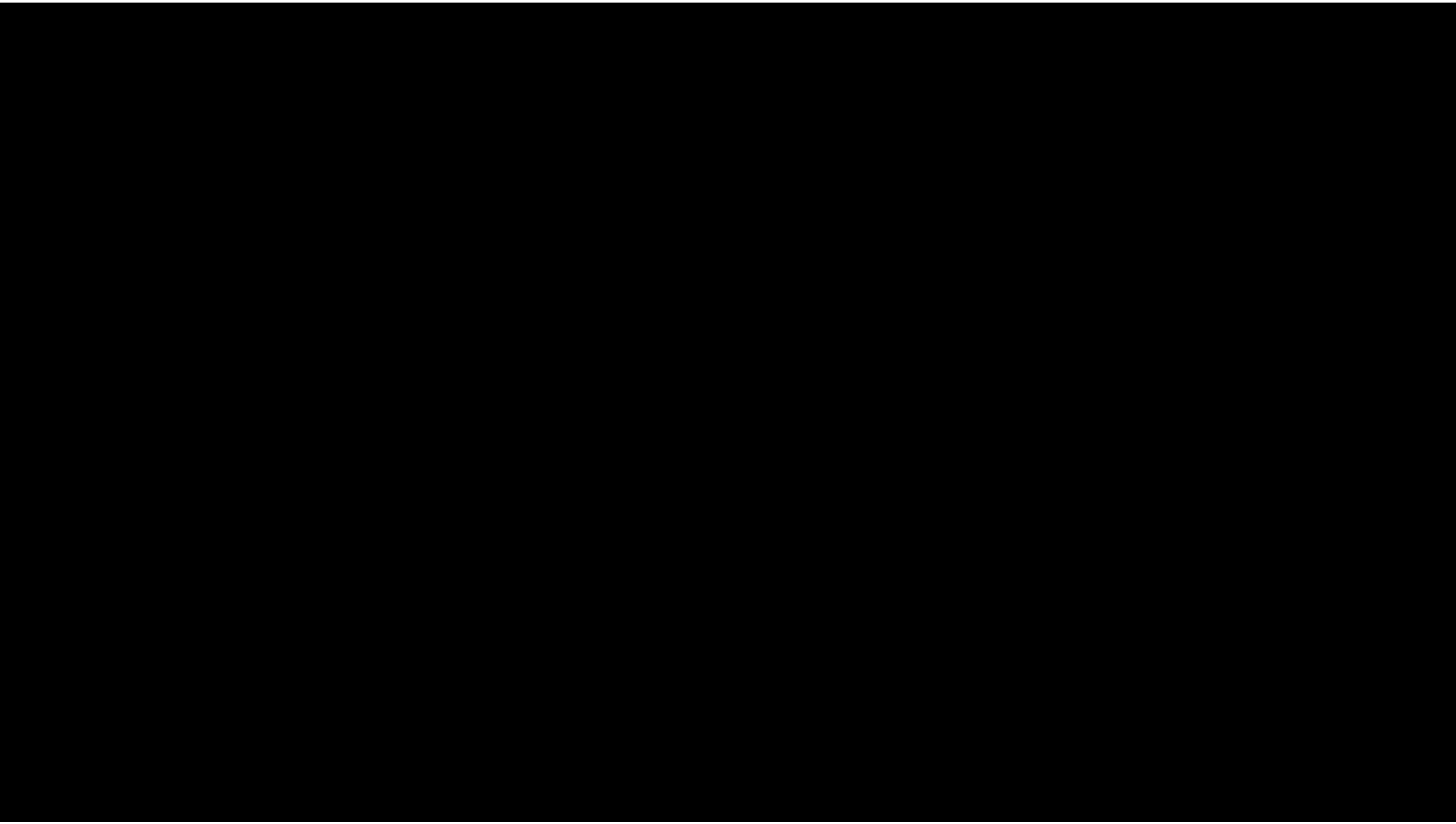
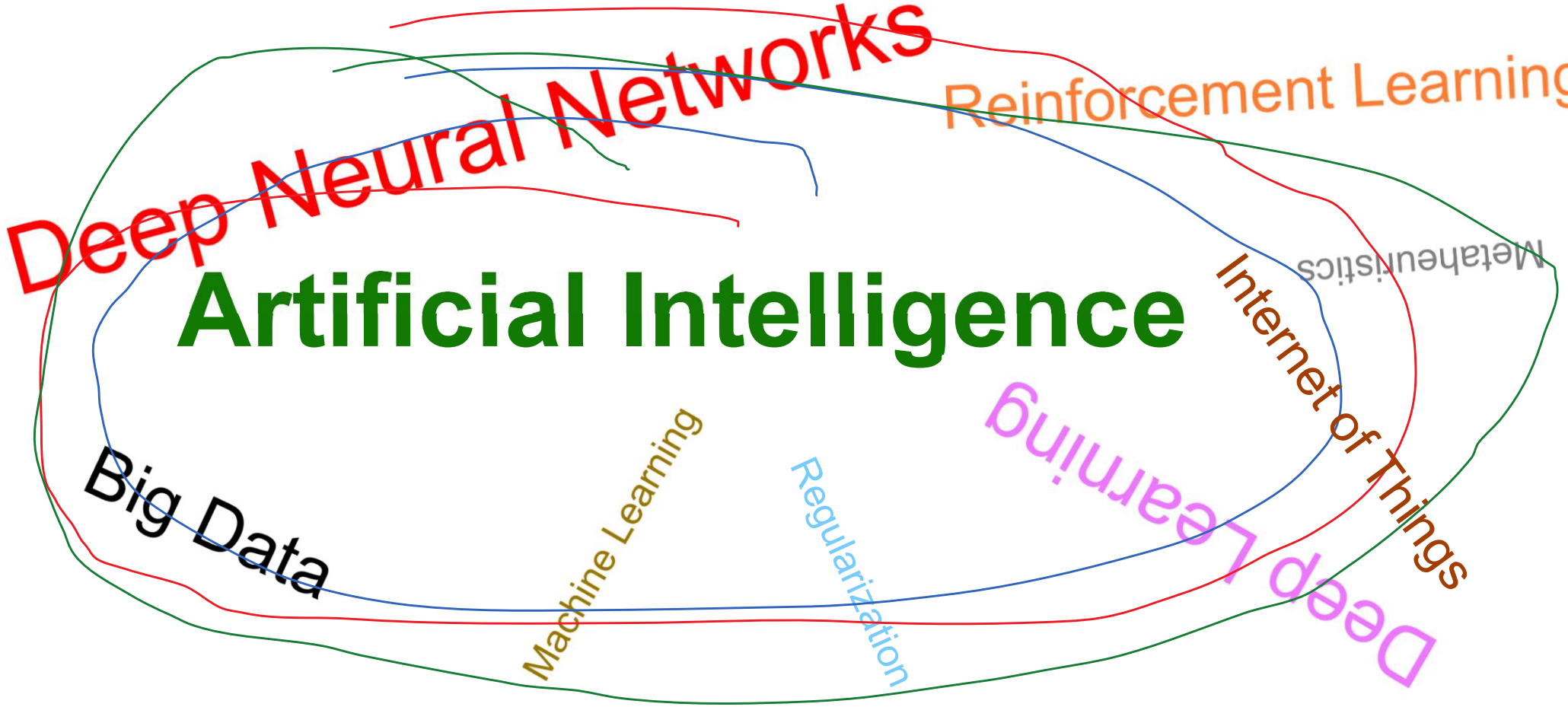
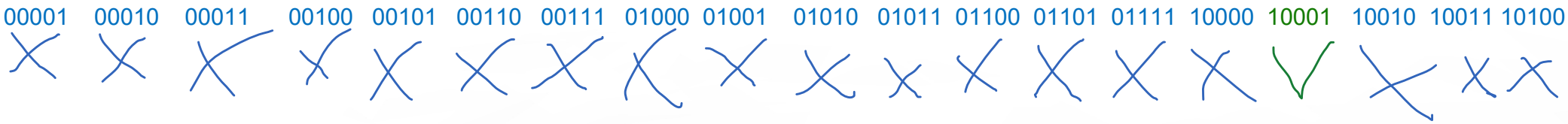


Artificial Intelligence (AI) requires many kinds of methods to work



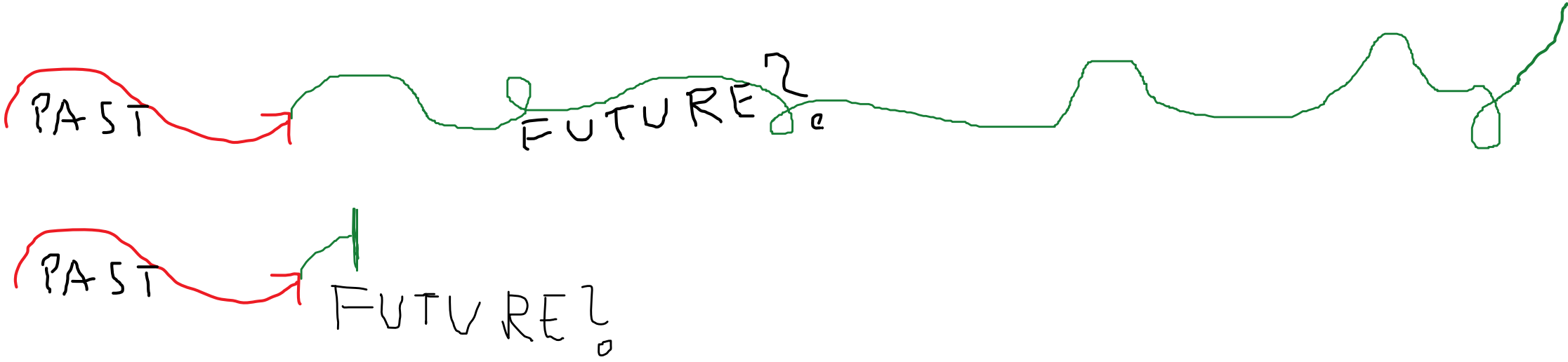
We do not understand why AI works



AI improvements are frequently achieved by excessive empirical experiments, rather than being based on theoretical expectations

We do not understand why AI works

we have no idea how far we could go this path



There are so many options how AI may shape science

„scientists may not be needed anymore”

„we may only ask questions and discuss answers”

……

„results of our work would have to be compared with the results obntained by AI”

……

„nothing would change”

Why?

„typical models in Earth Sciences are local – designed only for specific task”

„most models used in Earth Sciences are either for regression, or for classification”

„AI models may be applied to almost any task”

„they are well suited to solve regression or classification problems”

„to validate any task-specific model – it would have to be compared against universal AI methods”

Can we all perform such comparison appropriately?

„there are too many AI models”

„too many details”

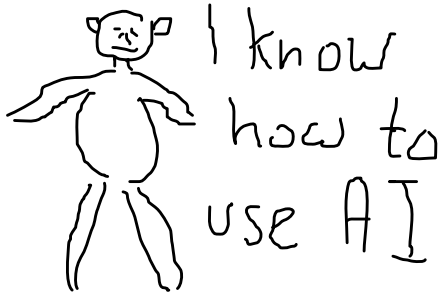
„too many technical difficulties”

„how to choose right models”

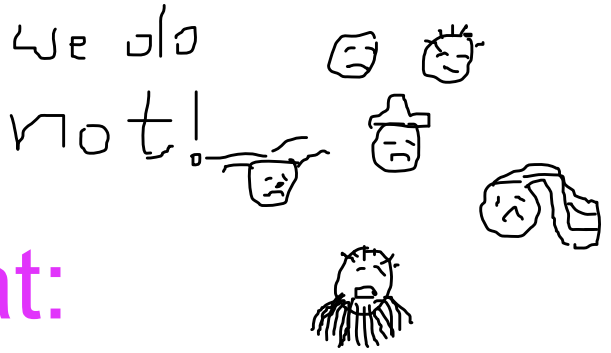
„how to learn if we use appropriate methods linked woth AI model”

„how to learn prticular AI model”

„how to choose specific architecture, control parameters, etc”



We need help



3-4 young AI experts that:

- have experience with some AI platforms and codes
- follow novel ideas in AI and deep learning
- know where to find codes/platforms, which versions are up-to-date, and how to run them
- know how to feed AI models with OUR DATA and how to set OUR CRITERIA for learning and comparison
- are ready to constant changes in the field (learning novel codes, platforms, architectures, associate methods, etc)

If we ask them

- they would choose a few AI/deep learning models for us
- they would attach our data and criteria
- they would run the codes and give use results
- or come to us and teach us how to do that ourselves

Thanks to that

- we could be alive when Editors/Reviewers would ask to use AI/deep learning everywhere
- even if Editors do not tur this way, we could publish more comparison papers (our methods against AI)
- we would be aware how our experience performs against AI
- we may skip areas that are dominated by AI and focus on topics that are hard for AI models
- we could try to explain the differences between our models and AI, and maybe suggest some fussion