Improving eligibility propagation using Izhikevich neurons in a multilayer RSNN.

Presentation 4: A bidirectional crossroads

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Work done since previous meeting

- ☑ Implement Bellec's tricks. Should be able to reproduce thereafter:
  - ☑ L2 & firing rate regularization
  - ☑ Firing rate regularization
  - ☑ Gaussian distribution for broadcast weights
  - ☑ Adam optimizer
- ☐ **Bidirectional network** (?)
- ☐ Obtain Bellec's performance.
- ☐ Experiment with my own tweaks (e.g. multi-layered).

Current system performance

- ☑ Implement Bellec's tricks. Should be able to reproduce thereafter:
  - ☑ L2 & firing rate regularization
  - ☑ Firing rate regularization
  - ☑ Gaussian distribution for broadcast weights
  - ☑ Adam optimizer
- ☐ **Bidirectional network** (?)
- ☐ Obtain Bellec's performance.
- ☐ Experiment with my own tweaks (e.g. multi-layered).

Questions

- Only difference: bidirectionality.
  Pros: closer to Bellec.
  Cons: no good reason, no bioplausibility, no online learning.
- Q1: Bidirectional network: is my understanding correct? Switch target sequence too?
- Q2: Should I implement it, or try to maximize performance on unidirectional?
- Q3: Further suggestions on how to proceed, based on current performance?