# rec 08: inventing rnns

Today we'll encounter general design themes in deep learning by 'inventing' RNNS.

*tailor* a neural network to a task's inherent dependencies
*exploit* a task's symmetries to improve generalization.
*explain* the assumptions behind each design choice leading to RNNs

As always, please ask questions at any time, including by interrupting me!

Our rough schedule is:
*19:30* 'to build a tool, use it'
*19:45* locality
*20:00* symmetry
*20:15* cnns: 'derivation'
*20:30* rnns: 'derivation'
*20:45* gating in rnns
*21:00*

## meeting the data

## wishful thinking

TO BUILD A TOOL, USE IT — sam draws stuff

EXPLOITING SYMMETRY — Let's help our machine not re-invent the wheel.

**data augmentation**
**canonicalization**
**data abstraction**
**equivariant architecture**
sam draws stuff

## example: recurrent neural networks

LOCALITY AND SYMMETRY: 1D CNN —

LATENTS AND DEPENDENCIES: RNN —

MEMORY ACTIVATION FUNCTIONS —