

Regression for learning curve prediction

Matthias

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1 approach

Fit a function on the first k steps of a learning curve and use it to extrapolate to step 40.

Functions (x = time step, y = test loss):

- linear: $y = \beta \cdot x$
- logarithmic: $y = \beta \cdot \log_{10}(x)$

Parameters:

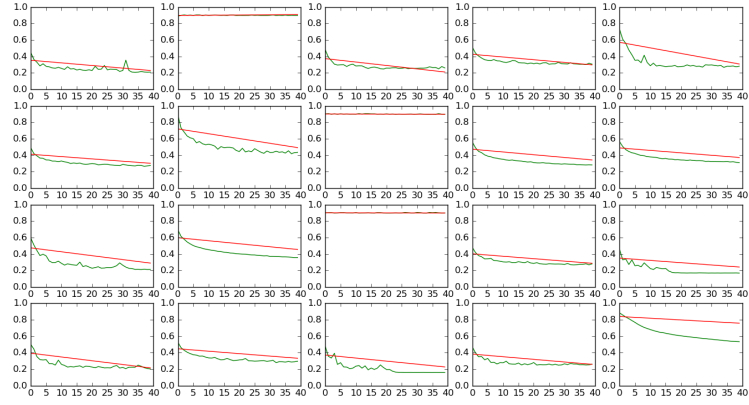
- a range $[t_1, t_2)$ of time steps that are used for fitting the curve, e. g. (0, 5) to use the first 5 steps
- weighting: if true, later time steps are repeated in the data that is used to fit the curve, and such get more importance
- alpha: the alpha for Ridge Regression

2 results

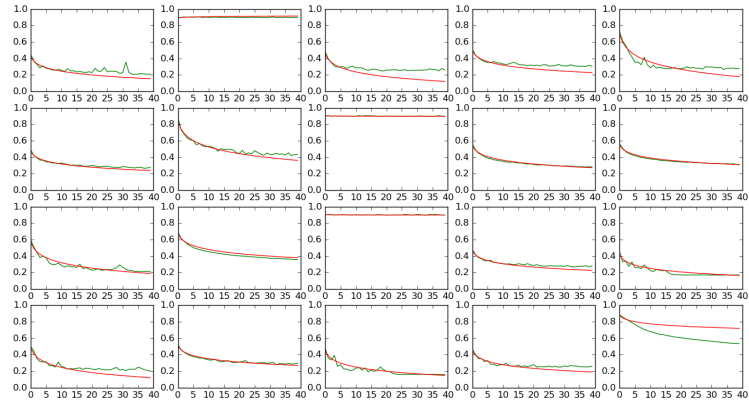
step range	function	weighting	alpha	epoch 40 loss
(0, 5)	linear	false	100	0.006879
(0, 5)	logarithmic	false	0.1	0.007100
(0, 10)	linear	false	1000	0.008266
(0, 10)	logarithmic	false	1	0.003381
(10, 20)	linear	false	100	0.000935
(10, 20)	logarithmic	false	0.1	0.000796

3 example curves

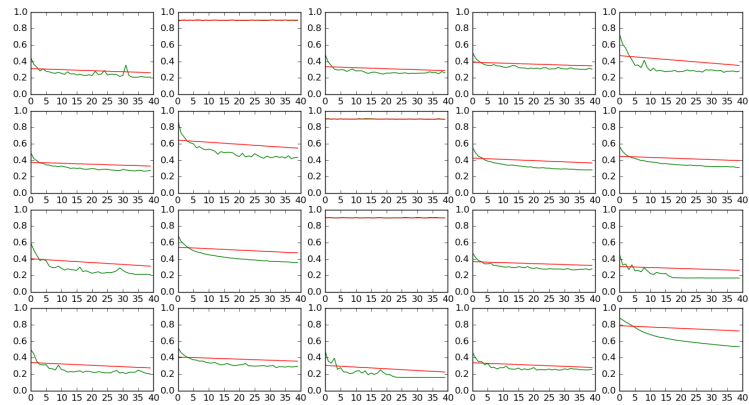
Linear on range (0, 5):



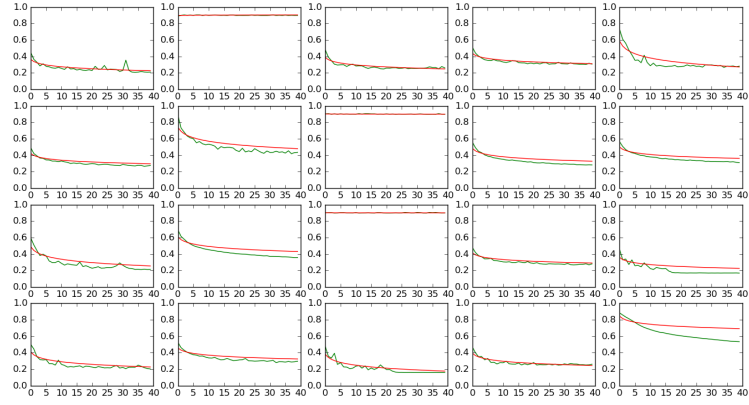
Logarithmic on range (0, 5):



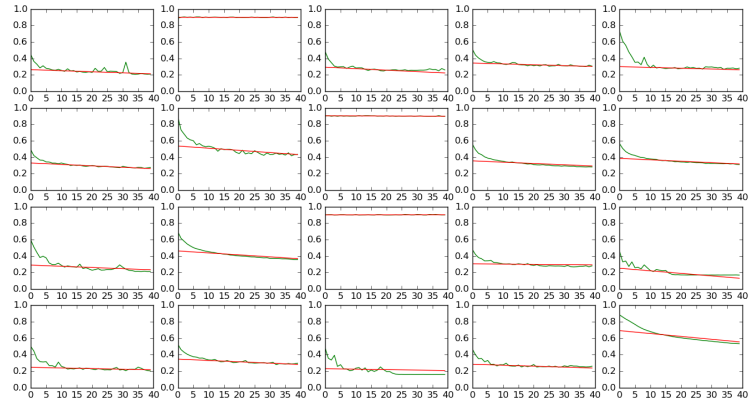
Linear on range (0, 10):



Logarithmic on range (0, 10):



Linear on range (10, 20):



Logarithmic on range (10, 20):

