FEATURE CROSSES

A synthetic feature formed by multiplying
(i.e. crossing) two or more features.

Example:

①

How to fit into
form $\text{sign}(b + w_1 x_1 + w_2 x_2)$?

→ Synthetic $x_3 = x_1 x_2$

② Housing: lat × num-bedrooms
→ 3 bedrooms in SF is diff.
from 3 bedrooms <nowhere?

③ Tic tac toe: pos1 × pos2 × ... × pos9

Why?

→Incorporate nonlinear learning into linear learner

★ - Linear models scale very well!
 - Also helpful in NNs

Crossing one-hot vectors (for cat values)

 - Lang × Country
 - Lat × Long (after binning)
 - etc.