

1E3S (1 Embedding & 3 Stacking layers)

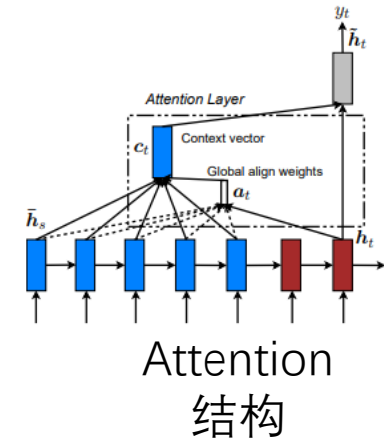
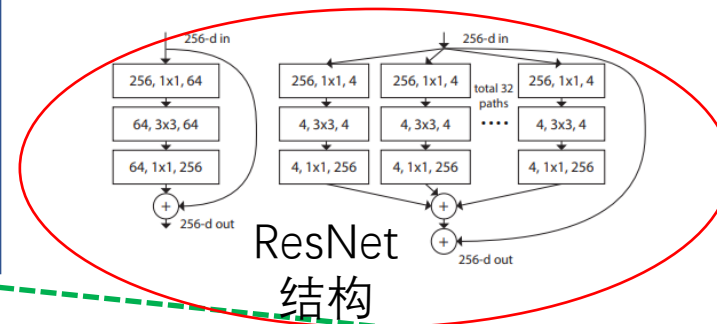
2016
PNN

2016
Wide & Deep

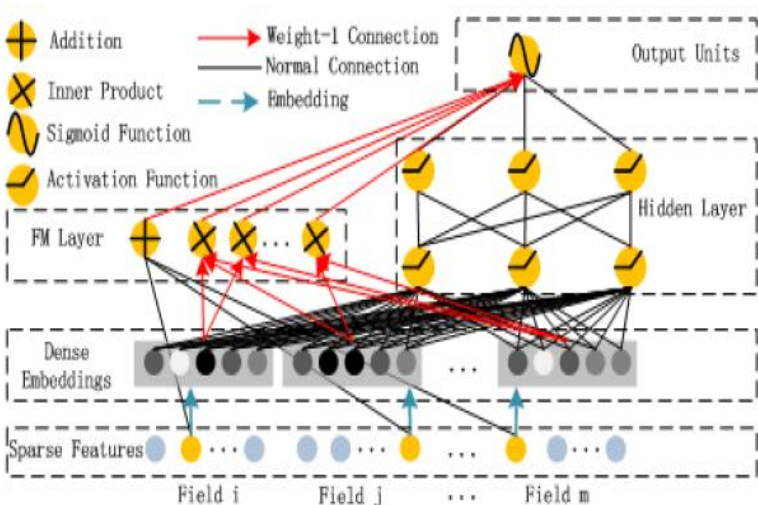
2017
DeepFM

2017
DCN

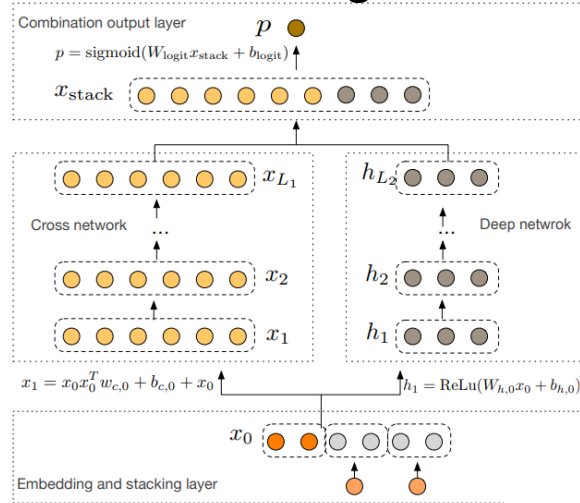
2017
NCF - NeuMF



LR → Embedding based FM Layer

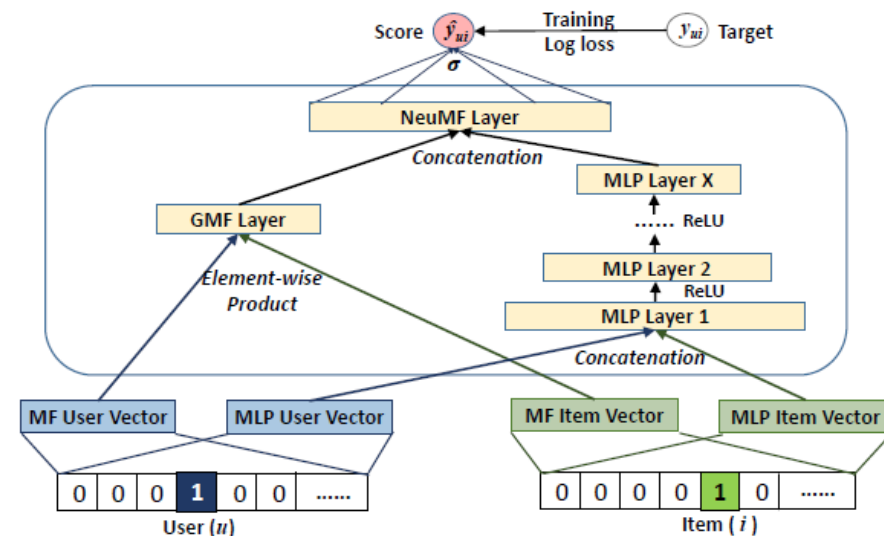


LR → Embedding based Cross Net



$$y = x_0 * x' * w + b + x$$

Deep & Cross Network (DCN)



$$\begin{aligned} \phi^{GMF} &= p_u^G \odot q_i^G, \\ \phi^{MLP} &= a_L(W_L^T(a_{L-1}(\dots a_2(W_2^T \begin{bmatrix} p_u^M \\ q_i^M \end{bmatrix} + b_2)\dots)) + b_L), \\ \hat{y}_{ui} &= \sigma(h^T \begin{bmatrix} \phi^{GMF} \\ \phi^{MLP} \end{bmatrix}), \end{aligned}$$

Neural matrix factorization model, NeuMF