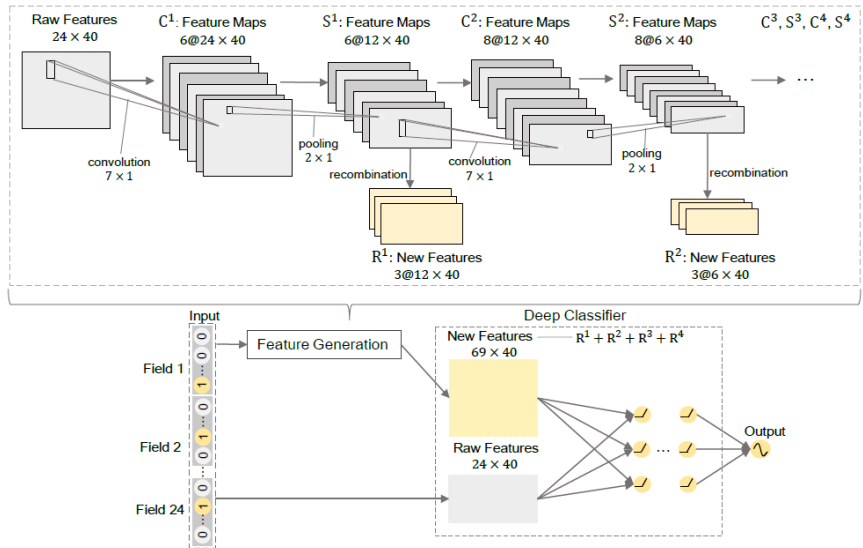
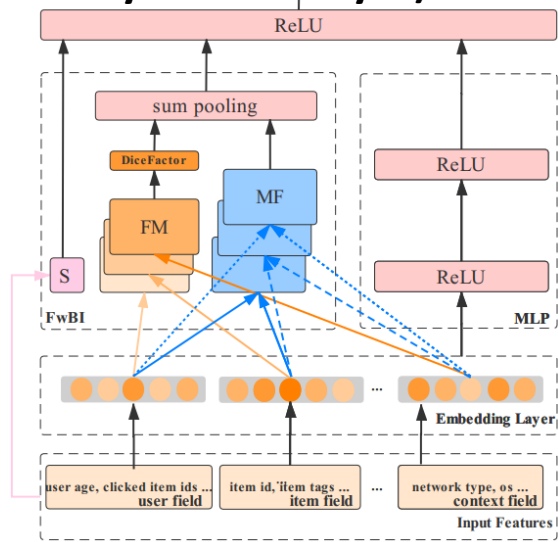


LR → CNN Layers for Feature Generation



Feature Generation by Convolutional Neural Network (FGCNN) model

FM Layer → FwBI (Linear + FM Layer + MP Layer)



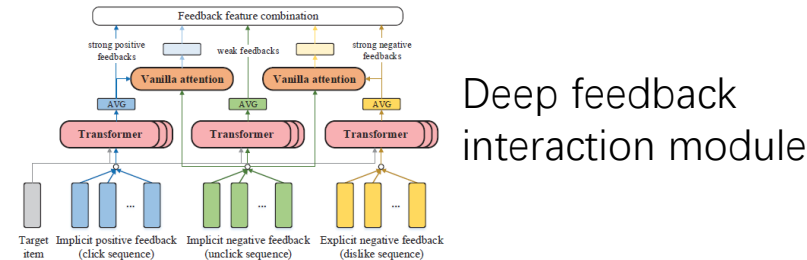
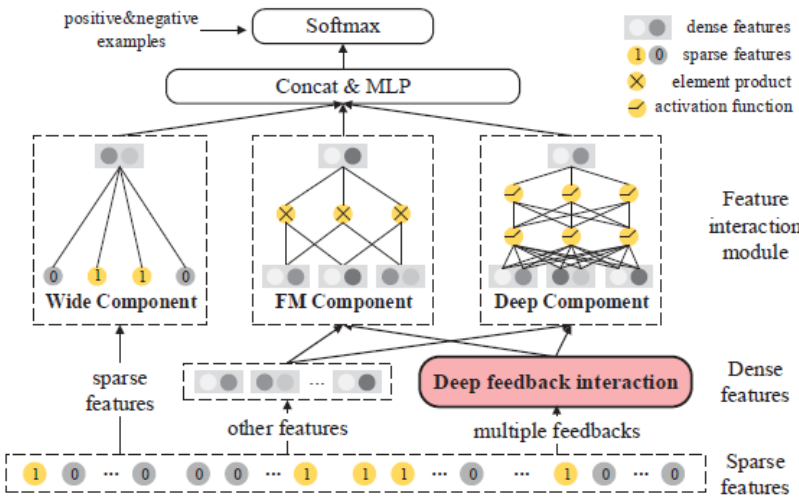
$$\Phi_{FwBI} = W_{FwBI}^T \left[w_0 + \sum_{i=1}^N \sum_{j=1}^{K_i} w_{ij} [i] x_{ij} [j] \right]$$

$$+ \sum_{i=1}^M \sum_{j=i+1}^M \left[\left(\sum_{n, F(n)=i} v_n x_n \right) \left(\sum_{n, F(n)=j} v_n x_n \right) r[i][j] \right]$$

$$+ \sum_m \left[\left(\sum_{n, F(n)=m} v_n x_n \right)^2 - \left(\sum_{n, F(n)=m} (v_n x_n)^2 \right) \right] r[m][m]$$

Field-Leveraged Embedding Network (FLEN)

Wide & Deep → Wide & FM & Deep + Deep Feedback Interaction



Deep feedback network, DFN