- Deep learning
  - Neural network
    - Single deep learning
      - Auto-encoder (AE) (25)
        - AutoRec
          - 2015-Autoencoders meet collaborative filtering
        - Collaborative Filtering Neural network (CFN)
          - 2016-Hybrid Recommender System based on Autoencoders.
          - 2015-Collaborative Filtering with Stacked Denoising AutoEncoders and Sparse Inputs
        - Autoencoder-based Collaborative Filtering (ACF)
          - 2014-Autoencoder-based collaborative filtering.
        - Collaborative Denoising Auto-Encoder (CDAE)
          - 2016-Collaborative denoising auto-encoders for top-n recommender systems
      - Multi-layer Perceptron (MLP) (15)
        - Deep and wide NN
          - 2016-Wide & Deep Learning for Recommender Systems
        - Collaborative deep learing (CDL)
          - 2016-Collaborative Deep Learning for Recommender Systems
        - Neural Collaborative Filtering
          - 2017
        - CCCFNet (Cross-domain Content-boosted Collaborative Filtering neural Network)
          - 2017
      - Restrict Boltman machine (RBM) (7)
        - Restricted Boltzmann Machine Collaborative Filtering (RBM-CF)
        - Hybrid RBM-CF
      - RNN (22)
      - Deep sematic similar model (3)
        - Deep Semantic Similarity based Personalized Recommendation (DSPR).
          - 2016-Hashtag Recommendation Using Attention-Based Convolutional Neural Network
        - Multi-View Deep Neural Network (MV-DNN)
          - 2015-A multi-view deep learning approach for cross domain user modeling in recommendation systems.
      - CNN (17)
        - Attention-based CNN
          - 2016-Hashtag Recommendation Using Attention-Based Convolutional Neural Network
        - Personalized CNN tag recommendation
          - 2017-Personalized Deep Learning for Tag Recommendation
      - Neural Autoregressive Distribution Estimation (NADE) (2)
        - 2011-The neural autoregressive distribution estimator
        - 2016-A Neural Autoregressive Approach to Collaborative Filtering
      - Generative Adversarial Network (GAN) (1)
        - 2017- IRGAN: A Minimax Game for Unifying Generative and Discriminative Information Retrieval Models.
    - Deep composite model (10)
      - CNN + AE
        - 2016-Collaborative knowledge base embedding for recommender systems
      - CNN and RNN
        - Hashtag Recommendation for Multimodal Microblog Using Co-Attention Network
        - 2016-Quote Recommendation in Dialogue using Deep Neural Network
        - 2015-A multi-view deep learning approach for cross domain user modeling in recommendation systems
      - CNN and MLP
        - 2017-Neural Rating Regression with Abstractive Tips Generation for Recommendation.
        - 2016-. Comparative Deep Learning of Hybrid Representations for Image Recommendations.
        - 2016-ConTagNet: exploiting user context for image tag recommendation
      - RNN and Autoencoder
        - 2016-Collaborative recurrent autoencoder: Recommend while learning to fill in the blanks
      - RNN and MLP
        - 2017-Neural Rating Regression with Abstractive Tips Generation for Recommendation.
      - CNN and DSSM
        - 2010
      - RNN and DSSM
        - 2016-Multi-rate deep learning for temporal recommendation.
    - Deep Learning + Traditional RS
    - Only deep learning