# Glove 300d +simple embedding without finetuning

Parameter setting:

Use MLP classifier with 2 hidden layers. the same with using MLP in Glove experiment.

Some analysis:

Compared to Glove experiment with finetuning (analyzing using average embedding):

The arrow -> indicate *experiments without finetuning -> experiments with finetuning*

|  |  |
| --- | --- |
| CPU | (R@1: **0.06->0.07**  R@5: **0.49->0.54**) |
| RAM | (R@1: **0.29->0.67** R@5: 0.99->0.99) |
| HD | (R@1: **0.30->0.37** R@5: 0.93->0.92) |
| GPU | (R@1: 0.60->0.58 R@5: **0.96->0.98**) |
| Screen | (R@1: **0.69->0.76**  R@5: **0.96->0.99**) |

\***Bold indicate improved results**

We can see that:

1. For classes with few labels (RAM, Screen, HD): R@1 shows great improvement, R@5 shows very few or no improvement.
2. For classes with many labels (CPU): R@1: nearly no improvement, R@5 has some improvement.

Most of experiment shows improvement. This proves the effect of finetuning the trained model before applying on the needs data.

|  |  |
| --- | --- |
|  | MLP |
| Pointwise average of word embedding  (ave) | cur\_exp\_setting: cpu,ave  ndcg:  0.24266144814090018  0.44227005870841485  0.5056693853263947  0.5600854502368061  0.5648315766703568  0.5767258904903451  0.5679488125124551  0.5620642568676986  0.5615341989660037  0.5636790167461523  precision:  0.24266144814090018  0.2318982387475538  0.21591650358773645  0.21135029354207435  0.21135029354207435  0.21037181996086105  0.2043611965334079  0.20645792563600782  0.2035225048923679  0.19863013698630136  recall:  0.060665362035225046  0.1159491193737769  0.16193737769080235  0.21135029354207435  0.26418786692759294  0.3155577299412916  0.3576320939334638  0.41291585127201563  0.45792563600782776  0.4965753424657534 |
| cur\_exp\_setting: ram,ave  ndcg:  0.2942271880819367  0.7541899441340782  0.8387838775738276  0.8723034306464533  0.887541521155568  precision:  0.2942271880819367  0.3770949720670391  0.29608938547486036  0.2388268156424581  0.19813780260707636  recall:  0.2942271880819367  0.7541899441340782  0.888268156424581  0.9553072625698324  0.9906890130353817 |
| cur\_exp\_setting: hd,ave  ndcg:  0.3054003724394786  0.46741154562383613  0.6506984014099585  0.7158753101622869  0.7351234244895898  precision:  0.3054003724394786  0.23370577281191807  0.2526381129733085  0.22206703910614525  0.18659217877094972  recall:  0.3054003724394786  0.46741154562383613  0.7579143389199255  0.888268156424581  0.9329608938547486 |
| cur\_exp\_setting: gpu,ave  ndcg:  0.6089385474860335  0.6871508379888268  0.7470715408419827  0.8103862522013868  0.8328423855832401  precision:  0.6089385474860335  0.3435754189944134  0.260707635009311  0.2271880819366853  0.19217877094972066  recall:  0.6089385474860335  0.6871508379888268  0.7821229050279329  0.9087523277467412  0.9608938547486033 |
| cur\_exp\_setting: screen,ave  ndcg:  0.6983240223463687  0.8528864059590316  0.8752098050611877  0.8966250750798097  0.9102591560616492  precision:  0.6983240223463687  0.4264432029795158  0.29608938547486036  0.23277467411545624  0.1925512104283054  recall:  0.6983240223463687  0.8528864059590316  0.888268156424581  0.931098696461825  0.962756052141527 |
| Pointwise maximum of word embedding  (max) | cur\_exp\_setting: cpu,max  ndcg:  0.3542074363992172  0.5068493150684932  0.5572137765026604  0.5784143473930707  0.6093350089268956  0.6044030962445371  0.5738406183040173  0.5848667105196521  0.586456459701244  0.5799153779214928  precision:  0.3542074363992172  0.2700587084148728  0.25048923679060664  0.22602739726027396  0.21643835616438356  0.21493803000652315  0.22085546547386078  0.21501956947162426  0.20982822352685365  0.20743639921722112  recall:  0.0885518590998043  0.1350293542074364  0.18786692759295498  0.22602739726027396  0.2705479452054795  0.32240704500978473  0.38649706457925637  0.4300391389432485  0.47211350293542076  0.5185909980430529 |
| cur\_exp\_setting: ram,max  ndcg:  0.11731843575418995  0.7951582867783985  0.8738776415070543  0.885981924561058  0.9068340484156359  precision:  0.11731843575418995  0.39757914338919925  0.30664183736809436  0.2360335195530726  0.1985102420856611  recall:  0.11731843575418995  0.7951582867783985  0.9199255121042831  0.9441340782122905  0.9925512104283054 |
| cur\_exp\_setting: hd,max  ndcg:  0.33519553072625696  0.3947858472998138  0.6626666365256852  0.7157392622240096  0.7221553003331106  precision:  0.33519553072625696  0.1973929236499069  0.27312228429546864  0.2313780260707635  0.18808193668528864  recall:  0.33519553072625696  0.3947858472998138  0.819366852886406  0.925512104283054  0.9404096834264432 |
| cur\_exp\_setting: gpu,max  ndcg:  0.6256983240223464  0.6368715083798883  0.7050166214285752  0.8065063793429144  0.8177344460338409  precision:  0.6256983240223464  0.31843575418994413  0.2482929857231533  0.23696461824953446  0.19478584729981377  recall:  0.6256983240223464  0.6368715083798883  0.74487895716946  0.9478584729981379  0.9739292364990689 |
| cur\_exp\_setting: screen,max  ndcg:  0.770949720670391  0.8733705772811918  0.8804200717345041  0.9120774274142064  0.92089947981422  precision:  0.770949720670391  0.4366852886405959  0.2948479205462446  0.23696461824953446  0.19366852886405958  recall:  0.770949720670391  0.8733705772811918  0.8845437616387337  0.9478584729981379  0.9683426443202979 |
| The concatenation of the pointwise average and maximum of word embedding  (concat) | cur\_exp\_setting: cpu,concat  ndcg:  0.21526418786692758  0.3913894324853229  0.5147420795429185  0.5483742257092541  0.5844420640347788  0.589113027027529  0.5822235629732749  0.5715680966760182  0.5734477743305766  0.5652324997622119  precision:  0.21526418786692758  0.19765166340508805  0.20874103065883887  0.20058708414872797  0.19882583170254403  0.19765166340508805  0.19904948280682136  0.1944716242661448  0.1902587519025875  0.19354207436399218  recall:  0.053816046966731895  0.09882583170254403  0.15655577299412915  0.20058708414872797  0.24853228962818003  0.2964774951076321  0.34833659491193736  0.3889432485322896  0.4280821917808219  0.48385518590998045 |
| cur\_exp\_setting: ram,concat  ndcg:  0.48789571694599626  0.7951582867783985  0.8762274729914918  0.8929872495278046  0.9082253400369192  precision:  0.48789571694599626  0.39757914338919925  0.3078833022967101  0.239292364990689  0.1985102420856611  recall:  0.48789571694599626  0.7951582867783985  0.9236499068901304  0.957169459962756  0.9925512104283054 |
| cur\_exp\_setting: hd,concat  ndcg:  0.33519553072625696  0.39664804469273746  0.6574793394652964  0.7152074586459303  0.7216234967550312  precision:  0.33519553072625696  0.19832402234636873  0.27001862197392923  0.2313780260707635  0.18808193668528864  recall:  0.33519553072625696  0.39664804469273746  0.8100558659217877  0.925512104283054  0.9404096834264432 |
| cur\_exp\_setting: gpu,concat  ndcg:  0.6256983240223464  0.6368715083798883  0.7144159473663251  0.8084569157089696  0.8188829776362587  precision:  0.6256983240223464  0.31843575418994413  0.2532588454376164  0.23696461824953446  0.19441340782122904  recall:  0.6256983240223464  0.6368715083798883  0.7597765363128491  0.9478584729981379  0.9720670391061452 |
| cur\_exp\_setting: screen,concat  ndcg:  0.770949720670391  0.8733705772811918  0.8898193976722543  0.917752358566109  0.9233663919115723  precision:  0.770949720670391  0.4366852886405959  0.29981378026070765  0.2388268156424581  0.19366852886405958  recall:  0.770949720670391  0.8733705772811918  0.8994413407821229  0.9553072625698324  0.9683426443202979 |