

Análisis Sistemas de Recomendación

Filtrado Colaborativo

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Asignatura: Gestión del Conocimiento en las Organizaciones

Introducción

En este documento se plasman varias ejecuciones de la implementación de Filtrado Colaborativo realizada por el alumno. Se incluyen una serie de capturas para cada uno de los grupos de matrices de diferentes tamaños que se encuentran en el [siguiente repositorio](#).

Existen 5 grupos de matrices diferenciados por su tamaño:

1. 10 x 25
2. 100 x 1000
3. 25 x 100
4. 5 x 10
5. 50 x 250

Se incluye una ejecución de la matriz número 6 de cada grupo. Los demás parámetros son elegidos siguiendo el orden presentado en el enunciado del proyecto y/o a necesidad.

Ejecución 10 x 25

Métrica: Pearson

Vecinos: 6

Predicción: Simple

```
ooscar@oscar-laptop:~/Documentos/Recomendador-GC0-Oscar-Pozo-master$ ./bin/RecomendadorEXE ./ejemplos/utility-matrix-10-25-6.txt Pearson 6 Simple
Argumentos de ejecución: ./ejemplos/utility-matrix-10-25-6.txt Pearson 6 Simple

Matriz ratings original:
2 5 3 2 1 3 3 2 3 5 2 - 0 5 1 - 2 1 1 4 0 5 4 4 0
2 4 3 1 0 2 3 5 2 5 3 1 0 4 1 3 0 2 1 2 5 1 5 2 0
1 0 3 5 4 1 - 0 4 2 4 5 3 4 4 5 1 3 2 4 5 3 5
4 3 5 4 1 1 2 1 4 2 4 1 - 5 3 5 2 5 2 1 1 2 3 0 3
3 1 2 5 1 0 0 0 0 - 3 0 - 1 3 2 0 - 1 4 5 5 4 3
0 5 5 2 4 4 3 5 1 - 0 3 - 1 1 4 3 5 2 - - 4 4 2 5
4 4 2 4 5 1 2 5 3 3 3 4 0 5 1 - 3 - 2 1 5 3 2 1 4
0 3 1 2 1 2 2 0 - 0 4 3 3 3 2 5 1 2 0 5 4 1 3 5
3 4 5 0 4 1 0 1 4 2 1 2 3 0 4 4 2 2 0 4 1 4 0 5 5
3 1 4 2 5 3 2 3 1 2 3 0 0 2 4 1 1 5 4 3 3 0 4 1

Matriz ratings similitudes:
1 0.999402 0.998842 0.999097 0.998859 0.999017 0.999008 0.99866 0.998869 0.998959
0.999402 1 0.998519 0.999127 0.998894 0.999141 0.999258 0.998651 0.998477 0.998957
0.998842 0.998519 1 0.999117 0.999171 0.998821 0.998904 0.999291 0.999082 0.998823
0.999097 0.999127 0.999171 1 0.998931 0.998876 0.999371 0.998982 0.998936 0.998867
0.998859 0.99894 0.999171 0.998931 1 0.998712 0.998801 0.998981 0.998796 0.999009
0.999017 0.999141 0.998821 0.998876 0.998712 1 0.999218 0.998975 0.999063 0.998996
0.999008 0.999258 0.998904 0.999371 0.998801 0.999218 1 0.999136 0.998764 0.999055
0.99866 0.998651 0.999291 0.998982 0.998981 0.998975 0.999136 1 0.998983 0.998775
0.998869 0.998477 0.999082 0.998936 0.998796 0.999063 0.998764 0.998983 1 0.99917
0.998959 0.998957 0.998823 0.998867 0.999009 0.998996 0.999055 0.998775 0.99917 1

Matriz con las predicciones realizadas:
2 5 3 2 1 3 3 2 3 5 2 1 0 5 1 3 2 1 1 4 0 5 4 4 0
2 4 3 1 0 2 3 5 2 5 3 1 0 4 1 3 0 2 1 2 5 1 5 2 0
1 0 3 5 4 1 1 0 4 4 2 4 5 3 4 4 5 1 3 2 4 5 3 5
4 3 5 4 1 1 2 1 4 2 4 1 1 5 3 5 2 5 2 1 1 2 3 0 3
3 1 2 5 1 0 0 0 0 2 3 0 1 1 3 2 0 1 1 4 5 5 4 3
0 5 5 2 4 4 3 5 1 2 0 3 0 1 1 4 3 5 2 2 3 4 4 2 5
4 4 2 4 5 1 2 5 3 3 3 4 0 5 1 3 3 2 2 1 5 3 2 1 4
0 3 1 2 1 2 2 0 2 0 4 3 3 3 2 5 1 2 0 5 4 1 3 5
3 4 5 0 4 1 0 1 4 2 1 2 3 0 4 4 2 2 0 4 1 4 0 5 5
3 1 4 2 5 3 2 3 1 2 3 0 0 2 4 1 1 5 4 3 3 0 4 1
```

Ejecución 100 x 1000

Métrica: Coseno

Vecinos: 56

Predicción: Media

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PROBLEMAS SALIDA CONSOLA DE DEPURACIÓN TERMINAL
78 0.99854 0.99874 0.99829 0.99801 0.99878 0.99874 0.99879 0.99796 0.99821 0.99813 0.99807 0.99811 0.99811 0.99804 0.99878 0.99856 0.99839 0.99851 0.99775 0.99824 0.99864 0.99877 0.99796 0.99872 0.9
9883 0.99893 0.99822 0.99816 0.99879 0.99805 0.99819 0.99823 0.99816 0.99806 0.99877 0.99883 0.99845 0.99838 0.99888 0.99774 0.99825 0.99874 0.99837 0.99813 0.99854 0.99807 0.99873 0.99811
0.99766 0.99881 0.99791 0.99805 0.99795 0.99848 0.99794 0.99838 0.99825 0.99766 0.99784 0.998 0.99878 0.99765 0.99833 0.99827 0.99888 0.99831 1 0.99833 0.9979 0.99759 0.99821 0.99855 0.99817 0.998
335
0.99816 0.99884 0.99883 0.99848 0.99842 0.99759 0.99804 0.99807 0.99769 0.99848 0.99866 0.99786 0.99874 0.99733 0.99818 0.99737 0.99813 0.998 0.99842 0.99857 0.99878 0.99848 0.99812 0.99879 0.998
47 0.99776 0.99879 0.99879 0.99852 0.99807 0.99801 0.99816 0.99819 0.99849 0.99829 0.99804 0.9985 0.99893 0.99842 0.9977 0.99836 0.99854 0.99852 0.99876 0.99873 0.99829 0.99779 0.99878 0.99858 0.9
98742 0.99803 0.99823 0.99834 0.99888 0.99877 0.99833 0.99834 0.9982 0.9984 0.99853 0.99838 0.99769 0.99856 0.9983 0.99897 0.99874 0.9983 0.99878 0.99897 0.99866 0.99809 0.99802 0.998795 0.99871 0
99833 0.99873 0.99899 0.99775 0.99878 0.99876 0.99778 0.99853 0.99786 0.99859 0.99787 0.99843 0.99804 0.99812 0.99796 0.99861 0.99876 0.9986 0.99833 1 0.99879 0.99875 0.99814 0.99876 0.99749 0.998
57
0.99878 0.99877 0.99884 0.99875 0.99883 0.99811 0.99818 0.99876 0.99802 0.99886 0.99875 0.99844 0.998751 0.998748 0.99872 0.99876 0.998745 0.99885 0.998765 0.99848 0.99826 0.998747 0.99844 0.99879
0.99818 0.998791 0.99872 0.99843 0.998 0.9977 0.99819 0.99817 0.998785 0.99806 0.99877 0.99835 0.99874 0.99825 0.99878 0.99853 0.99879 0.99877 0.99874 0.99879 0.99843 0.99844 0.99884 0.99885 0.99875
0.99854 0.99875 0.99826 0.99813 0.99873 0.99805 0.99853 0.99804 0.99821 0.99896 0.99733 0.99875 0.99737 0.99811 0.99816 0.99861 0.99888 0.99875 0.99847 0.99806 0.99852 0.9981 0.99806 0.99878 0.9
9827 0.99855 0.99859 0.99801 0.99713 0.99836 0.99793 0.9985 0.99823 0.99872 0.9986 0.99878 0.99801 0.99876 0.99885 0.998797 0.99887 0.99889 0.99879 0.998769 1 0.998739 0.998773 0.99843 0.99836 0.99861
0.99843 0.99855 0.99865 0.99875 0.99876 0.99796 0.99864 0.99819 0.99877 0.99852 0.99852 0.99755 0.99875 0.99874 0.99875 0.99874 0.99883 0.99871 0.99884 0.99874 0.99857 0.9987 0.99871 0.99879 0.99883
9 0.99879 0.99879 0.99879 0.99873 0.99812 0.99875 0.99884 0.99882 0.99873 0.99875 0.99883 0.99815 0.99837 0.99873 0.99836 0.99889 0.99896 0.99875 0.99875 0.998824 0.99844 0.99842 0.99852 0.9
98762 0.99881 0.99876 0.99816 0.99827 0.99875 0.99825 0.99812 0.99876 0.99814 0.99885 0.99876 0.99838 0.99815 0.99883 0.99844 0.99885 0.99873 0.99874 0.99881 0.99882 0.998739 0.99815 0.99881 0.998782 0.99
9514 0.99883 0.99853 0.998758 0.99874 0.99876 0.99873 0.99818 0.99879 0.99844 0.99815 0.99883 0.99876 0.99835 0.99874 0.99885 0.99853 0.99876 0.99879 0.99875 0.998739 1 0.998825 0.99849 0.998778 0.9988
4
0.99807 0.99807 0.99884 0.99877 0.99867 0.99814 0.99881 0.99879 0.99854 0.99897 0.99801 0.99883 0.99803 0.99883 0.99876 0.99883 0.998741 0.99891 0.99874 0.99832 0.99886 0.99873 0.99822 0.99887 0.99879 0.99891
6 0.99813 0.99879 0.99879 0.99873 0.99885 0.99872 0.99875 0.99878 0.99889 0.99845 0.99885 0.99882 0.99881 0.998861 0.99859 0.99832 0.99886 0.99885 0.99832 0.998 0.99881 0.99841 0.99828 0.99881 0.99879 0.99880
7 0.99883 0.99801 0.99879 0.99802 0.99829 0.99853 0.99849 0.99879 0.99886 0.99886 0.99878 0.99818 0.99841 0.99889 0.99875 0.99866 0.99859 0.99888 0.99878 0.99849 0.99829 0.99828 0.99817 0.99876 0.9
9807 0.99852 0.99812 0.99855 0.99875 0.99842 0.99849 0.99841 0.99869 0.99845 0.99766 0.9981 0.99888 0.99871 0.99832 0.99854 0.998 0.99871 0.99814 0.99873 0.99825 1 0.99841 0.99876 0.99875
0.99883 0.99831 0.99896 0.99887 0.99852 0.99843 0.99885 0.99837 0.99806 0.99852 0.99859 0.99852 0.99851 0.99831 0.99847 0.99874 0.99876 0.99886 0.99847 0.99867 0.99822 0.998716 0.99857 0.998
868 0.99882 0.99889 0.99834 0.99805 0.9981 0.99805 0.99872 0.99861 0.99872 0.9983 0.99833 0.99871 0.99844 0.99849 0.99821 0.99897 0.99825 0.99826 0.99866 0.99881 0.99856 0.99828 0.99881 0.99847
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0.99806 0.99817 0.99802 0.99854 0.99818 0.99875 0.99849 0.99866 0.99859 0.99883 0.99879 0.9984 0.99821 0.99876 0.99816 0.9987 0.99879 0.998782 0.99874 0.99874 0.998824 0.99874 0.99836 0.998778 0.99873 0.998
827 0.99873 0.99828 0.99807 0.99875 0.99832 0.99822 0.99867 0.99829 0.998751 0.99826 0.99883 0.99826 0.99878 0.99873 0.99888 0.99879 0.99865 0.99874 0.99876 0.99872 0.99819 0.99861 0.9
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99833
0.99824 0.99898 0.99876 0.99868 0.99843 0.99875 0.99879 0.99846 0.99883 0.99842 0.998936 0.99832 0.99848 0.99888 0.99873 0.99819 0.99842 0.998815 0.99871 0.99851 0.99887 0.998834 0.99819 0.99889 0.998
715 0.99879 0.99875 0.99886 0.99841 0.99896 0.99851 0.99828 0.99823 0.99869 0.99887 0.99844 0.99827 0.99854 0.99869 0.99885 0.99869 0.99822 0.99878 0.99876 0.99882 0.99856 0.99874 0.99874 0.99884
0.99807 0.99871 0.99872 0.99837 0.99836 0.99818 0.99841 0.99866 0.99833 0.99893 0.99878 0.99874 0.99888 0.99839 0.99863 0.99896 0.99855 0.99837 0.99802 0.99896 0.99852 0.9985 0.99875 0.99812 0.998
47 0.99875 0.99876 0.99886 0.99886 0.99844 0.99874 0.99873 0.99878 0.99836 0.99873 0.99883 0.99879 0.99847 0.99883 0.99833 0.99878 0.99877 0.99861 0.99884 0.998775 0.99881 0.99881 0.998
833 1
Matriz con las predicciones realizadas:
1 3 2 1 0 2 4 4 5 3 5 0 5 4 2 1 1 1 2 5 2 5 2 2 5 1 5 1 2 0 1 0 5 5 2 4 5 5 3 3 3 1 5 0 3 3 2 3 3 5 4 1 0 3 1 5 4 0 5 4 1 2 3 3 2 4 3 5 5 0 0 2 1 1 2 5 2 2 1 0 0 4 4 2 1 0 1 1 1 4 0 5 3 0 4 5 4 0 1 1 4 5 3 0
2 0 4 5 3 5 4 5 0 5 3 2 3 5 3 0 1 2 2 1 4 2 2 2 1 4 4 1 5 4 1 5 2 4 1 3 0 1 1 1 4 0 2 1 1 1 2 5 2 2 0 2 0 1 0 1 4 2 5 2 0 4 4 2 2 0 4 4 5 4 1 0 2 1 4 1 4 5 5 2 0
2 0 5 4 2 3 0 0 4 4 2 2 0 0 5 2 5 3 4 5 2 3 4 5 1 1 5 0 0 4 0 3 1 5 3 3 1 0 0 4 4 1 1 2 0 0 2 0 5 1 5 0 0 1 3 4 5 0 2 3 2 2 5 1 5 1 0 1 5 3 2 1 1 2 2 5 0 2 1 0 2 3 2 4 2 2 5 0 1 3 2 2 1 2 3 5 0 5 1 2 1 1 4 5 3 4
2 5 5 4 3 5 4 0 5 4 5 3 2 5 4 0 4 2 4 5 2 5 0 5 3 2 3 3 5 4 0 4 2 4 5 1 0 5 4 1 0 4 2 1 5 4 1 4 4 5 3 3 1 1 0 4 1 1 0 3 3 1 2 0 4 3 3 1 5 1 1 0 4 3 2 0 4 2 1 4 5 5 2 0 1 3 1 2 0 0 5 4 3 3 1 1 0 3
2 0 5 2 5 0 0 1 0 3 3 2 0 3 0 5 3 1 0 1 1 5 5 5 4 4 3 0 5 2 1 2 1 2 2 4 0 0 2 1 2 2 1 5 0 5 2 2 4 5 1 5 0 4 4 5 0 4 2 4 3 4 0 1 2 4 1 4 2 3 0 4 4 4 4 5 4 4 1 2 0 5 5 0 5 3 3 3 1 3 4 2 2 2 4 4 5 1 1 3 3 3 0 5 0
2 0 5 3 1 4 1 2 2 5 1 2 1 3 1 5 4 2 4 5 3 1 2 2 4 0 0 2 2 2 1 1 4 2 0 0 3 0 5 5 3 2 1 2 1 2 4 4 5 0 4 1 1 1 3 2 5 5 4 5 3 2 4 5 2 2 2 1 5 4 0 0 0 1 3 4 3 4 4 2 4 2 2 1 2 1 4 5 5 3 4 3 3 0 3 1 3 2 2 4 0 0 2
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4 0 3 5 4 0 5 2 3 0 1 0 5 2 0 5 2 3 2 3 2 4 4 4 2 3 5 1 3 0 6 5 3 2 0 0 4 2 2 4 4 0 2 0 5 4 4 0 4 4 8 1 2 3 0 2 1 5 1 1 2 1 3 3 2 1 2 1 4 2 0 1 3 5 5 0 4 4 4 3 4 2 1 2 1 0 1 1 5 2 2 0 5 5 3 1 1 1 2
3 5 0 0 2 4 1 2 0 6 2 5 4 3 2 5 2 2 3 2 5 0 5 1 4 3 0 6 2 0 5 1 1 4 0 5 5 2 5 2 0 1 0 4 4 4 0 5 4 1 3 2 2 0 1 4 0 5 4 5 4 1 4 4 1 5 3 1 1 2 2 4 1 3 0 2 5 0 1 4 0 5 3 0 3 2 1 3 2 2 5 2 1 1 1 2 4 2 2 1 4 0 3 0 3 2
1 2 4 0 2 0 2 5 5
4 3 5 0 0 0 3 1 4 2 1 1 1 2 1 0 1 0 3 3 0 1 4 3 4 5 2 0 0 3 4 3 2 1 5 2 3 3 0 2 3 4 1 4 1 4 4 2 2 1 1 4 2 0 0 2 2 5 4 5 3 3 1 4 1 0 3 2 0 3 2 3 1 3 5 0 4 2 0 0 2 1 2 4 0 4 0 2 3 5 4 5 2 2 3 1 4 5 5 3 0 3 1 4 5 3 0 5
0 3 1 4 2 3 4 1 4 2 4 1 1 4 5 4 5 4 3 4 1 0 5 0 0 5 5 1 2 4 4 4 4 0 4 0 3 4 0 2 2 0 2 1 2 5 3 2 0 5 0 1 4 4 1 4 2 3 1 4 1 1 5 0 5 5 1 5 1 4 4 4 4 2 0 0 5 3 1 3 3 4 2 0 1 3 4 2 0 1 2 2 4 3 1 5 0 3 1 4 0 0 1 5
2 0 5 2 0 3 3 0 5 5 1 3 1 2 5 4 3 0 0 5 3 3 3 3 0 5 5 5 5 5 5 4 0 1 5 2 2 5 1 2 0 1 1 4 2 5 2 5 1 2 0 1 1 4 2 5 1 3 4 1 1 5 1 3 4 1 0 0 5 4 4 0 2 4 1 0 5 5 4 4 2 1 0 5 5 4 2 4 1 1 0 5 5 4 2 1 0 5 5 4 2 1 0 5
2 0 3 1 3 1 1 2 4 5 4 1 0 1 1 2 3 4 1 0 1 4 0 0 0 1 4 1 4 0 0 0 1 4 2 4 2 3 5 7 0 1 4 4 0 0 0 2 0 5 1 3 3 4 1 0 0 0 0 3 5 3 4 1 3 3 0 4 0 1 4 3 0 0 0 3 1 4 2 1 3 5 3 4 0 1 4 3 0 0 5 0 4 3 5 1
1 0 0 2 3 3 4 3 2 5 0 1 5 5 1 3 5 1 5 4 0 1 0 0 3 5 5 1 3 5 1 5 0 4 3 5 0 4 5 4 5 0 3 2 1 1 0 3 1 3 4 2 4 0 0 3 0 3 2 2 0 4 0 0 5 1 1 3 0 4 0 5 1 2 3 1 4 2 0 4 2 3 1 5 3 4 1 2 4 0 5 5 1 4 0 0 4 0 5 1 5 1 3 5 1 4 4 2
3 0 2 2 5 2 4 2 2 5 5 3 1 3 1 4 5 2 4 2 2 1 3 5 4 3 3 2 1 0 2 1 1 5 0 2 0 1 3 5 1 5 4 0 2 1 2 3 4 1 0 3 3 2 2 0 4 0 6 1 2 0 5 1 4 1 4 0 4 2 5 3 2 1 4 1 0 4 1 3 0 2 2 3 3 3 4 4 3 5 2 4 0 4 0 1 4 1 2 3 4 4
3 0 2 2 5 2 1 1 4 1 5 2 5 4 0 0 5 3 0 5 1 1 5 0 4 1 2 5 2 4 2 1 4 2 3 4 5 5 4 3 2 0 0 5 0 0 3 1 4 2 0 1 4 1 5 0 4 4 3 5 2 4 5 3 1 2 3 4 2 1 5 4 5 4 4 3 5 0 3 4 3 3 3 0 2 3 0 4 0 4 3 0 3 2 1 2 1 0 4 2 2 5 4 3 2 2
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(No cabe en la terminal pero se ejecuta)

[illegible]

Ejecución 50 x 250

Métrica: Coseno

Vecinos: 22

Predicción: Simple

```
oscar@oscar-Laptop:~/Documentos/Recomendador-GCD-Oscar-Pozo-masters/.bin/RecomendadorEXE ./ejemplos/utility-matrix-50-250-6.txt Coseno 22 Simple
Argumentos de ejecución: ./ejemplos/utility-matrix-50-250-6.txt Coseno 22 Simple

Matriz ratings original:
5 2 1 5 5 0 1 2 4 3 1 0 4 4 2 1 1 2 2 0 0 2 3 0 2 1 5 1 3 0 2 1 0 5 4 3 3 4 5 2 0 4 1 1 4 5 0 0 0 5 4 2 1 2 2 0 3 0 2 2 5 3 0 2 2 0 4 2 2 5 1 2 4 4 0 1 4 1 . 0 0 3 5
5 3 5 0 0 3 0 5 1 5 5 4 2 5 3 5 4 3 2 4 5 2 4 5 3 1 0 0 1 0 1 4 1 3 4 5 4 5 2 4 5 1 4 2 2 3 1 2 0 2 4 5 1 3 2 2 3 5 1 2 3 3 3 2 2 4 2 5 4 4 0 0 5 3 3 0 4 4 3 1 1 0
2 1 1 2 2 2 0 0 0 0 0 4 5 3 4 0 3 2 3 4 2 2 0 4 4 4 3 2 0 5 5 2 1 3 4 4 0 2 5 3 3 5 4 1 4 3 4 4 1 1 3 1 1 0 5 0 4 0 0 . 1 1 4 2 3 5 3 2 4 0 0 5 1 0 4 1 4 2 2 1
1 5 0 1 2 5 4 1 5 4 2 5 2 2 0 1 0 1 1 5 0 2 2 3 5 4 2 1 0 0 3 3 0 1 3 4 4 5 4 4 1 0 5 3 3 5 3 1 0 5 1 5 0 0 3 4 . 5 3 0 3 4 4 1 4 0 3 0 3 0 1 1 3 0 2 5 0 3 1 3 3 0
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4 1 3 4 4 5 0 0 5 0 4 1 3 1 2 4 3 1 2 0 2 0 3 5 2 2 2 . 5 1 0 0 2 0 1 0 4 5 5 4 5 1 4 3 5 0 4 1 1 2 2 4 1 1 0 2 0 1 1 1 1 2 2 5 2 0 3 3 3 5 5 0 2 2 4 0 2 3 5 4 0
5 4 0 2 2 3 3 5 1 2 3 0 1 0 0 0 4 7 0 2 0 1 1 0 1 0 0 3 2 3 0 1 3 2 0 3 5 5 4 0 1 2 5 5 4 5 4 5 4 0 3 2 2 5 2 4 5 1 2 1 5 0 7 3 1 0 2 2 1 3 2 5 3 1 5 4 0 3 5 3 4 0 0
0 5 0 0 1 2 4 0 5 2 3 3 2 3 2 5 3 3 4 5 2 2 4 5 0 5 3 5 5 3 1 5 1 2 1 0 4 0 4 5 4 4 5 0 5 5 4 2 1 2 1 5 5 1 5 0 0 4 0 5 1 0 4 3 0 1 2 0 4 4 3 0 4 4 5 4 5 1 1 1 1 2 0
0 2 0 4 0 3 1 5 3 0 5 3 1 3 0 2 5 5 3 2 3 4 0 1 1 3 0 2 4 3 1 1 3 0 4 4 5 4 2 0 0 4 5 4 1 0 2 1 3 1 2 0 1 1 5 2 1 5 1 3 5 1 3 4 1 4 5 4 4 0 2 3 3 1 5 . 1 1 1 5 5 1 0
4 2 4 0 4 4 3 3 0 4 3 0 3 2 4 4 1 3 3 1 1 4 0 5 3 2 2 1 5 . 5 0 1 4 3 3 2 4 1 0 0 2 4 3 4 1 5 3 4 0 3 2 2 2 5 5 3 2 1 0 2 2 0 6 2 1 2 2 4 1 2 4 3 5 2 4 4 1 4 0 0 0 0
0 0 0 4 4 3 2 4 0 5 3 0 3 5 0 3 5 0 3 5 4 5 2 1 0 3 0 1 5 0 4 4 3 5 5 1 0 5 5 3 2 3 3 3 1 0 1 5 5 4 4 2 3 4 1 5 2 4 3 3 4 5 2 4 1 0 4 4 5 5 3 2 2 4 4 1 2 3 2 3 3 3 2
3 2 1 5 3 1 4 5 1 1 3 4 0 1 1 4 0 0 4 0 1 4 5 2 3 2 2 3 4 1 1 5 0 4 5 1 0 2 1 4 1 0 0 0 1 2 5 3 4 4 2 3 2 3 4 2 2 3 2 4 2 2 4 4 4 5 0 4 5 1 4 0 5 4 1 5 1 1 1 4 3 0
2 2 2 4 0 2 2 2 4 5 5 3 1 1 1 2 1 3 1 2 2 0 0 1 2 2 0 3 2 5 5 2 1 2 0 4 . 1 1 4 0 3 3 5 0 5 1 4 4 3 4 2 1 0 . 4 1 4 0 0 6 2 5 0 4 4 4 3 1 5 4 1 4 3 5 0 5 3 5 4 4 1
3 0 2 3 1 0 5 1 4 1 3 0 0 2 2 4 0 3 2 1 1 2 0 4 2 4 5 0 2 5 2 1 0 3 4 1 3 2 1 2 2 5 1 2 3 3 2 5 0 1 5 1 1 3 0 4 0 4 . 1 0 2 3 4 5 4 4 3 2 4 2 1 5 0 5 0 0 5 1 2 5 0
0 4 4 4 1 5 4 1 0 5 1 5 1 2 0 3 3 2 5 1 4 5 2 4 3 5 0 3 3 2 5 1 4 2 3 2 5 5 1 3 5 5 4 3 5 5 4 3 5 4 2 1 0 2 0 5 4 0 4 5 2 3 5 1 2 0 5 1 1 0 3 2 3 5 3 4 4 5 3 5 0
4 3 5 3 1 1 5 0 0 3 0 0 5 2 3 1 2 0 3 4 1 5 2 3 4 0 5 2 2 4 1 3 5 1 1 . 1 5 4 3 1 1 4 0 1 1 0 3 1 3 0 4 1 1 1 3 2 3 3 4 1 2 1 4 0 4 3 5 3 5 5 3 4 0 1 0 4 0 2
2 5 0 0 3 2 5 4 2 1 3 4 5 . 3 4 4 1 3 0 3 4 2 3 5 0 2 3 . 5 0 1 2 2 3 0 3 0 0 4 2 3 3 4 1 0 4 5 3 2 0 1 3 3 2 0 1 0 1 4 1 0 2 0 0 2 1 3 3 0 5 2 4 2 0 5 3 2 1 0 0
1 4 0 4 1 3 5 1 0 3 2 2 4 4 1 0 1 4 1 5 0 2 3 4 1 4 5 5 0 2 3 4 1 4 5 5 0 2 3 1 4 0 3 5 0 4 3 2 3 5 1 0 1 5 5 4 2 5 5 2 . 3 4 0 5 4 4 3 3 4 4 1 0 3 3 5 5 3 0 5 0 4
5 3 2 1 3 2 3 0 2 1 5 3 1 5 2 4 1 3 0 3 4 0 5 4 3 2 5 5 3 1 3 5 0 1 . 4 3 0 3 4 4 2 2 5 3 2 3 4 1 3 1 0 5 0 1 1 1 4 0 0 4 1 0 1 4 3 2 2 1 4 5 1 2 4 0 5 1 4 1 1 5 0 0
1 0 4 5 3 3 0 3 0 4 1 4 0 5 4 3 3 1 1 2 5 3 4 1 2 5 2 0 1 2 2 4 4 1 4 5 5 1 5 2 3 0 3 1 2 4 4 2 2 4 1 0 0 3 0 1 3 4 3 5 5 4 1 0 5 . 0 4 1 4 2 3 2 2 3 3 5 2 4 4 0
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2 4 4 1 3 3 3 5 0 5 5 . 2 0 5 2 1 1 5 0 5 2 . 3 3 1 2 1 4 5 1 0 2 5 4 2 5 2 3 4 3 2 1 2 5 0 4 0 3 5 3 1 2 1 1 0 0 1 0 1 3 2 5 4 5 2 5 4 0 2 5 1 1 1 1 2 0 4 5 0
4 0 4 0 1 0 0 4 5 4 4 5 4 5 0 3 3 2 2 1 5 3 1 3 5 1 4 3 3 3 5 4 1 1 0 0 4 1 2 0 4 0 5 0 4 3 1 0 0 0 5 5 1 2 1 2 . 4 4 1 4 3 1 2 5 4 5 4 4 5 0 3 0 4 2 3 3 3 0
0 5 1 4 2 1 3 2 5 4 4 2 0 1 4 1 2 2 1 4 3 4 . 2 5 4 5 0 2 0 4 3 2 5 5 0 0 4 . 1 2 0 2 4 5 2 5 . 1 3 1 5 0 3 0 4 5 0 1 3 5 4 1 3 1 4 2 4 0 5 2 3 2 2 4 1 4 4 3 0 4 1
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4 1 3 1 4 5 1 5 2 2 1 4 4 0 4 0 1 2 1 3 5 5 2 . 5 5 2 1 2 4 4 1 2 0 1 2 5 3 3 0 3 4 0 5 4 4 0 4 4 3 5 2 4 0 2 3 2 4 4 5 2 0 3 1 5 3 5 1 0 2 1 1 4 5 4 3 0 4 1
2 4 1 3 3 5 1 5 3 3 1 4 1 2 0 1 4 0 1 1 1 1 5 3 2 5 1 0 5 0 3 1 2 5 1 2 0 2 1 1 5 3 0 2 4 4 0 4 4 2 3 1 2 0 5 3 5 3 2 4 0 2 1 1 3 3 4 . 5 4 4 5 1 0 4 5 5 4 0 5 1
2 2 5 4 4 4 5 5 1 4 3 0 1 1 0 5 1 2 0 1 0 0 4 3 1 5 2 3 0 2 5 1 0 4 1 4 1 0 2 4 3 5 0 2 2 2 4 2 4 5 5 1 5 0 5 0 5 3 4 1 1 0 5 2 4 2 5 2 0 3 0 1 2 4 3 2 4 1 1 0
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4 5 4 4 2 0 4 0 3 4 2 1 5 2 5 4 5 5 5 1 1 3 0 5 . 3 4 1 4 4 3 1 2 5 0 4 2 4 0 5 2 5 0 3 5 5 2 0 5 4 3 4 5 2 0 3 4 3 3 1 5 4 0 4 5 3 2 4 5 4 0 5 5 1 2 1 3 4 5 0 2 4 . 0
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4 4 5 5 5 0 5 0 1 3 5 4 5 3 0 2 3 5 2 1 0 1 4 1 2 0 3 2 5 1 4 2 1 0 4 2 2 4 2 5 4 0 2 4 2 3 3 0 3 3 1 5 1 1 0 0 3 5 5 5 3 5 0 1 2 3 3 3 2 0 4 1 3 0 3 4 0 5 5 0 1 5 0
2 3 3 3 4 1 5 4 1 5 0 1 . 4 5 2 2 1 3 1 0 0 5 0 3 4 5 5 0 2 1 5 2 1 1 0 0 0 2 0 2 0 2 3 5 0 5 2 1 1 5 1 2 3 4 4 2 4 1 2 2 0 0 3 4 1 4 1 5 2 5 5 1 1 3 4 5 5 2 3 0
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Matriz ratings similitudes:
1 0.998775 0.998656 0.99862 0.998892 0.998824 0.998741 0.998807 0.998706 0.998827 0.998807 0.998971 0.99874 0.99888 0.998597 0.998864 0.99879 0.998794 0.998773 0.998
0.998775 1 0.998726 0.998704 0.998667 0.998744 0.998729 0.99878 0.998811 0.998825 0.998752 0.998792 0.998698 0.998789 0.998835 0.998717 0.998802 0.998764 0.998904 0
0.998656 0.998726 1 0.998811 0.998725 0.998623 0.998637 0.998669 0.998673 0.998695 0.998838 0.998782 0.998945 0.998942 0.998779 0.998577 0.998801 0.998754 0.998817 0
0.99862 0.998704 0.998811 1 0.998689 0.998625 0.998764 0.998582 0.998726 0.99862 0.998762 0.998798 0.998788 0.998823 0.998784 0.998445 0.998706 0.998627 0.99865 0.99
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0.998807 0.998752 0.998838 0.998762 0.998862 0.99866 0.99887 0.998714 0.998895 0.998689 1 0.998856 0.99882 0.998913 0.998925 0.998787 0.998859 0.998868 0.998856 0.99
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0.99879 0.998802 0.998801 0.998706 0.998718 0.998769 0.998916 0.99863 0.998837 0.99879 0.998859 0.998765 0.998772 0.998811 0.9988 0.998755 1 0.998799 0.998669 0.9988
0.998794 0.998764 0.998754 0.998627 0.998781 0.998562 0.998751 0.998815 0.998735 0.998697 0.998868 0.998877 0.998688 0.998729 0.998767 0.99868 0.998799 1 0.998739 0.99
0.998773 0.998904 0.998817 0.99865 0.998737 0.998778 0.998774 0.998763 0.998596 0.998711 0.998856 0.998773 0.998865 0.998857 0.99878 0.998754 0.998802 0.998669 0.998739 1 0.99
0.9989 0.998857 0.998756 0.998653 0.998661 0.99892 0.998903 0.998815 0.998732 0.99883 0.998889 0.998955 0.998865 0.998845 0.998765 0.998571 0.998837 0.998828 0.9988
0.998747 0.998882 0.998849 0.998715 0.998906 0.998779 0.998898 0.998711 0.998777 0.998941 0.998939 0.998899 0.998916 0.998893 0.99873 0.998801 0.998763 0.998761 0.99
0.998829 0.998602 0.998698 0.998685 0.998719 0.998747 0.998828 0.998673 0.998688 0.998784 0.998851 0.998929 0.998714 0.998838 0.99878 0.998612 0.998808 0.998807 0.99
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0.99892 0.998881 0.998949 0.998684 0.998921 0.998787 0.998852 0.998837 0.9987 0.998699 0.998847 0.99893 0.998854 0.999003 0.998719 0.998865 0.998832 0.998758 0.99892
0.998826 0.998608 0.998583 0.99
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Ejecución Adicional

Fichero: Random (5x10 n.º 9)

Métrica: Euclídea

Vecinos: 4

Predicción: Media

```
oscar@oscar-laptop:~/Documentos/Recomendador-GCO-Oscar-Pozo-master$ ./bin/RecomendadorEXE Random Euclidea 4 Media
Argumentos de ejecución: Random Euclidea 4 Media
Fichero seleccionado al azar: ./ejemplos/utility-matrix-10-25-9.txt

Matriz ratings original:
0 0 2 1 2 5 1 2 1 4 5 0 3 4 1 4 0 4 3 1 3 0 5 2 4
- 1 5 - 2 2 0 3 4 - 4 0 1 2 0 3 1 1 3 2 3 2 1 5 0
3 2 5 4 5 4 3 4 2 0 4 4 0 2 5 3 3 1 3 4 0 2 3 3 0
- 5 1 - 4 1 2 0 1 4 - 5 4 2 2 0 2 2 3 3 3 - 3 5 1
3 5 2 3 4 3 0 4 - 4 0 0 1 4 4 5 5 4 3 2 1 3 0 2 4
3 4 1 3 2 4 5 0 1 3 3 4 0 3 4 1 4 5 1 1 1 3 5 1 5
5 - 2 - 3 1 - 4 3 1 2 4 2 3 3 3 0 2 2 4 4 5 5 3 3
1 2 3 4 4 5 5 3 1 1 4 2 4 5 5 4 1 0 4 3 1 4 4 5 5
1 1 5 1 5 2 0 2 5 0 3 1 3 1 4 1 3 4 5 0 1 1 2 3 2
4 1 4 1 4 3 0 3 0 0 0 3 1 5 5 2 4 4 1 0 1 5 2 - 2

Matriz ratings similitudes:
0 97 174 132 154 136 133 121 127 170
97 0 95 114 127 203 90 145 73 126
174 95 0 121 133 132 90 89 101 101
132 114 121 0 137 108 66 126 125 121
154 127 133 137 0 126 119 147 119 83
136 203 132 108 126 0 105 131 167 113
133 90 90 66 119 105 0 89 132 92
121 145 89 126 147 131 89 0 152 138
127 73 101 125 119 167 132 152 0 106
170 126 101 121 83 113 92 138 106 0

Matriz con las predicciones realizadas:
0 0 2 1 2 5 1 2 1 4 5 0 3 4 1 4 0 4 3 1 3 0 5 2 4
2 1 5 1 2 2 0 3 4 1 4 0 1 2 0 3 1 1 3 2 3 2 1 5 0
3 2 5 4 5 4 3 4 2 0 4 4 0 2 5 3 3 1 3 4 0 2 3 3 0
3 5 1 2 4 1 2 0 1 4 3 5 4 2 2 0 2 2 3 3 3 2 3 5 1
3 5 2 3 4 3 0 4 2 4 0 0 1 4 4 5 5 4 3 2 1 3 0 2 4
3 4 1 3 2 4 5 0 1 3 3 4 0 3 4 1 4 5 1 1 1 3 5 1 5
5 2 2 2 3 1 2 4 3 1 2 4 2 3 3 3 0 2 2 4 4 5 5 3 3
1 2 3 4 4 5 5 3 1 1 4 2 4 5 5 4 1 0 4 3 1 4 4 5 5
1 1 5 1 5 2 0 2 5 0 3 1 3 1 4 1 3 4 5 0 1 1 2 3 2
4 1 4 1 4 3 0 3 0 0 0 3 1 5 5 2 4 4 1 0 1 5 2 2 2
```

Conclusiones

Los sistemas de recomendación son fundamentales para muchas plataformas modernas. Cada vez más el usuario espera una experiencia personalizada, y la mejor manera de ofrecer una sin realizar un estudio particular e incluso invasivo sobre el usuario es con el **Filtrado Colaborativo**.

Como es un sistema centrado en usuarios, se puede visualizar como un gran espacio donde se ordenan los diferentes usuarios, agrupándolos por calificaciones sobre varios elementos. Cuanto más haya calificado un usuario, más “allana” el camino a nuevos usuarios.

Si un nuevo usuario empieza a calificar elementos de manera muy similar a un usuario antiguo, las nuevas recomendaciones pueden ser mucho más acertadas, es por eso que también la cantidad de usuarios calificadores es crucial.

Cuanto más usuarios haya, más posibilidades hay que alguien tenga unos gustos muy parecidos a los míos y puedan ofrecerme nuevas recomendaciones en base a las nuevas calificaciones de ese usuario afín.

Otra ventaja de este sistema, es que a nivel de privacidad es mucho menos invasivo que otros donde el propio usuario tiene que incluir sus gustos y preferencias o incluso extraerlos de otras bases de datos. Simplemente con que el usuario use el sistema calificador, ya está mejorando su experiencia.

Sin duda es una técnica en la que merece invertir tiempo y procesamiento si ofrecemos productos en base a usuarios, pues puede aumentar las ventas, visualizaciones, altas, etc, de la plataforma.