Occupation recommendation with major programs for adolescents

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Students make initial and critical decisions regarding what to study further and which career path to pursue. Many students enter post-secondary education without a clear idea of their major and future career plans. Mismatch of the major choice and lack of processing information through the professional study is one of the reasons to switch the major. Such changes are wasteful in time and resources, and also it is the cause of emotional and financial stresses of students. An approximated twenty to fifty percent of students enter college as undecided, and an approximated seventy-five percent of students change their major at least once before graduation.

Hence, to find an adolescent's major/occupation as earlier as possible can help them to choose correct learning direction. Due to the rapid development of society, adolescents need counselling session to enable them to choose a suitable major and occupation. The choice of the major and occupation has become increasingly complex due to the existence of multiple human abilities and interests which mean each person or human has their ability or skill at the certain area and can be applied to multiple occupations. The main problem of difficulty making the major/occupation selection among students is they do not know how to make decisions, lack of knowledge and information about majors/occupations and over information of common occupations. Therefore, it is essential to build the major/occupation recommendation system for the adolescents with a capacity to meet all the needs where it provides direction and guidance to adolescents in choosing the major/occupation that suits with their vocational interests and competencies.

In this regard, this study proposes Occupation Recommendation System (ORS) with major program of study using Collaborative Filtering (CF) methods, a framework to assist students in the major/occupation selection, to provide the information about contemporary occupations, and to suggest the suitable occupations with the major program of study based on their interests, skills, favorite courses, high score courses, earned certificates, and learned tools/technologies. To do this, firstly we normalize data and secondly compute similarities. Then the predictions of factors are calculated if the factors are missing for the active student. Finally, the system executes hybrid CF algorithms to recommend the occupations with major program to the active student. The study was carried out in accordance with following two questionnaires with Mongolian 26 adolescents in the spring semester of the 2015/ 2016 academic year. In addition, Holland vocational Interest and skill questionnaires were employed respectively during the experiment for collecting data.

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