An Online Course Selection System: A Proposed System For Higher Education In Kurdistan Region Government

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An Online Course Selection System: A Proposed System For Higher Education In Kurdistan Region Government

Zanyar Ali Ahmed, Mazen Ismaeel Ghareb

Abstract: This paper introduces the plan and improvement of a proposed rule based Decision Support System that will enable students in choosing the best reasonable significant choice between public and private universities in Kurdistan Region Government. The fundamental thought of our approach is to design an online course selection system for student need to apply for an undergraduate degree. The system is based on mathematical and artificial intelligence rules to give the students best choose for their study. The system attributes depends on the age of the students, baccalaureate average mark, the cost of the study, studying time, etc. This system, it will help ministry of students, universities and ministry of higher education for managing their courses in properly and accurately.

Index Terms: Online Course Selection System, AI,Decision Support System, Subjective expert evaluations, Rational and anarchic decision making, Automation, Course planning, Knowledge engineering.

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1 INTRODUCTION

Kurdistan regional government is an developing countries in many areas. Higher education has been developed in recent year in this region, there are 28 universities, according Kurdistan ministry of higher education [1]. At the point when students finish their pre-college instruction, they take confirmation in college in a specific field/area of concentrate for their bachelor studies. This is an extremely basic stage for them on the grounds that their entire expert vocation relies upon it. So a better determination of Major is essential for them at this stage. We realize that distinctive fields of studies have contrast between them and they have distinctive essential necessities. Also, all students don't have a similar level of insight, understanding, cognizance, numerical ideas, his/her own particular enthusiasm for a field and his/her past scholarly record. So every field cannot suitable him/her, an exceptional field will be beneficial for him/her in accomplishing great outcomes for the future. There is likewise another factor influencing taking confirmation is, the fundamental paradigm of each division, which is additionally unique inside a college or from college to college So we can state that lone individual wants isn't sufficient alone to make him/her fruitful in it and not his/her want will work effectively for him/her. A few people lose their money and time in a field that isn't good with their capacities and capacities.

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The past factual proof has demonstrated that a considerable measure of student failure in their college examines despite the fact that, they get all the family support and they are not powerless in their examinations but rather as they didn't pick the correct information that was perfect with their capacities and capacities Numerous students pick a college personnel/major since it has a decent social notoriety or their companions have picked it. The students do not know the degree of their genuine abilities and capacities, and they don't have satisfactory ability to learn abilities required for every personnel/major. Decision Support systems can do this errand through the arrangement of a portion of the Questions requested that in different fields measure understudy abilities in these regions and the knowledge level. Decision Support systems help in settling on viable choices as it enables us to do just the right things. We have proposed a govern based Decision Support systems working like a specialist framework that contains a general rule-base and an inference engine [2]. The Kurdistan Regional Government does not provide a smart system for students for finding with major and university to choose. We have been developing an online system for students to choosing among 28 private and public universities, according on average marks, age, student branch, cost, and study types [3]. The rule based selection system can copy the basic leadership capacity of human specialists. They are intended to take care of issues as people do, by abusing encoded human information or expertise. This information can be extricated and gained specifically through collaboration with people, and also from printed and electronic assets, for example, books, magazines and sites. The removed learning frames the information base of the run based framework. The other significant segment of rule-based frameworks reaches determinations from this learning and is alluded to as the induction motor. The conclusions and proposals offered by the control based framework fulfill clients' requirements for aptitude in the selection area. Rule-based frameworks are intended to take care of issues in a chose space. Each area has its own particular information and thinking people, which can be imitated and even supplanted through automatic manage based frameworks. Numerous areas contain a lot of learning that can be caught completely just through a data framework, since people may not get to or quickly recover completely the required data. There are numerous points of

interest of managing based master frameworks: They diminish costs since they lessen the requirement for human specialists; they are lasting; they can be utilized for various information frameworks, which expands usefulness; they increment dependability since they limit blunders that people are inclined to; and if composed of different specialists, can build certainty. At least, they need human feelings, which are wellsprings of mix-ups in human-based frameworks. The upsides of rule-based master frameworks are multifold and they can significantly encourage human life to improve things. Adding more there are many awareness of the students in KRG for using technologies and tools for their studies after the war 2003 in Iraq [32][33][34][35].

2 LITERATURE REVIEW

The PACE exhorting framework is a choice model portrayal for the course, prompting in light of student"s need to know "what to do" and "how to do it". It comprised of profiling a student"s quality and shortcoming, creating individual educational programs redid to every understudy needs, and delivering a calendar for the courses picked [4]. The advising software at the Electrical Designing, Texas Tech College highlighted a graphical UI, that enabled understudies to ask for courses for which they have fitting requirements, co-necessities, and standing [5]. Comparative work has been researched by creators on an old and eliminated educational programs [6]. A Student Prompting Programming (SAS) is created by utilizing JAVA computer programming language. It is a manual strategy, which aides and aides understudies in choosing, fitting courses appropriate for online enrollment with the Pennant College Enlistment Framework [7]. An enhanced form of Understudy Exhorting and Arranging Programming is created at the Electrical Designing Division, UAE College. It is a automatic framework with constrained usefulness and around a 20% blunder rate [8], [9]. The scholastics at the Florida Atlantic College built up a comparative electronic exhorting framework that supplemented the ordinary prompting process [10]. A Bayesian Network Model for arranging course enrollment and exhorting by utilizing an information mining procedure is produced to anticipate the groupings of courses to be enlisted by college understudies whose majors are software engineering or designing [11]. SASSY advising system is created at the Armstrong Atlantic State University. This framework proposes courses for an advisee in light of; the recurrence of the course offering, adjusting the course stack, shortening the way length to graduation, the inclination of advisee and engaging diverse situations obviously stacks for the whole span of the advisee"s college life [12]. Two student management tools are intended to enable the understudies to finish their degree design sooner. The principal instrument gives a representative guide obviously arrangements, readied for every understudy, making prompting modifications that will streamline an opportunity to acquire the degree under a compiled set of assets. The second instrument is to gather data from numerous understudies through a few semesters and is utilized to recognize bottlenecks in the educational modules [13]. A specialist framework utilizing JESS (a JAVA based manage motor and scripting condition) is created that enables understudies to look for fast reactions to their questions in regards to their arrangement of study and advance in the program [14]. The Arjuna conveyed framework was created at The University of Newcastle upon Tyne, UK. Its plan points

were to give devices to aid the development of very accessible, blame tolerant dispersed applications utilizing nuclear activities. Shrivastava et al. Have examined the plan and execution of an enlistment framework that effectively met their prerequisites [15], [16]. Another advancement was finished at the Wylie College IT for programming, engineering improvement of a course enlistment framework utilizing the particulars made for the school necessities. The Software Architecture Document gives a building diagram of the C-Registration System. The C-Registration System was started by Wylie College IT to help online course enlistment [17]. As starting with one prompting and enrollment framework, then onto the next are perused, it has been theorized that determination archive is principal and the way to additionally building up an altered college course enrollment. Besides, as projects to be offered differ from establishment to the organization, and in the meantime, colleges consistently overhaul their educational modules too, as program prerequisites keeping in mind the end goal to meet market requests, the adaptability and unwavering quality of the enlistment framework to oblige such changes in the program contributions has been regarded fundamental for such a framework to survive and advance. ONLINE ADVISOR is an electronic choice help device [18], this apparatus is proposed to encourage the consultant and understudy to communicate with each other and settle on the choice for picking a suite course. This framework can assist the consultants with offering the suitable counsel to their understudies through indicating understudy data, courses that had been taken or not by the understudy also, changes in courses prerequisite. JESS-Java Expert System Shell-is a model that had been utilized to build up a Student Advising Expert System as a Graduate Program Advisor for Industrial Technology Department at California State University-Fresno.[3]. The need of the framework was to limit the understudy-forestallment what's more, facilitates the weight on workforce counselors by noting nearly similar inquiries. The model has a graphical UI (GUI)- based master framework and had been created utilizing JESS and Java. SAES-Student Advisor Expert System-this model had been tried on 1000 hopefuls understudies in India, which they take care to select in undergrad majors in the Engineering Department in Thapar University [4]. The principle objective of this framework is to help understudies in picking the most noteworthy fruitful major for them, by giving real recommendations are yet ordered into unequivocally, gently and pitifully prescribed. SAES is a mix of control based and case based master framework. INVESTA - Interactive Virtual Expert System for Advising - this model can work with either little or average estimated colleges [20], it had been propelled in a medium measured college at the Department of Computer and Information The art of Delaware State University. This framework is useful to consultants and understudies too. The proposed framework is Java-based with a protest social database and empowers clients to get to framework usefulness through an online interface. BUADVIS is a choice emotionally supportive network that had been produced to prompt students through the enrollment arrange [21]. This framework had been enhanced to encourage understudies and consultants in Bogazici University to settle on a choice about what courses must be taken by the understudy through a semester. The imperative contemplations that had been taken in this framework related such as tenets controls, and courses essentials. Primate SYSTEM is an information-based

framework that proposed to guide and helps scholastic understudy for arranging their investigations to get a scholarly degree [8]. It has the capacity for arranging a courses program which meets the understudy degree necessity. It likewise considered understudy inclinations and understudy quality. The framework is equipped for giving a right exhortation on requirements and exclusions. In the domain of tertiary education, scholastic exhorting is an understudy consultant community oriented process [23] intended to improve an understudy's general instructive experience by loaning scholarly choice help to them. This is finished by breaking down the understudy's scholarly records and outer components (scholastic capacities, interests, everyday plans and money related limitations) so as to create altered counsel [24]. Such counsel would then enable the understudy to settle on educating choices with the goal that they can build up a scholarly arrangement to supplement their own life objectives and finish their course of concentrate inside the recommended period or with negligible overabundance from that date. The advising procedure is a long haul and iterative because of the constant difference in the earth it works inside [25]. Such changes incorporate the expansion and expulsion of courses from their scholastic life with the goal that they can serenely achieve their instructional objectives [26]. In this light, guides must have full learning from the understudy's experience, scholastics, plans also, objectives, keeping in mind the end goal to give viable scholastic guidance. This may, along these lines, require visit 'one-on-one' understudy guide gatherings with the goal that a relationship can be produced between both parties whereby they comprehend the understudy's one of a kind needs. Such exhorting, be that as it may, can be hard to accomplish predominantly because of the accessibility of experienced and conferred people to embrace the errand [27]. As per [28] examine a framework which utilizes database inquiries on the data put away inside every understudy's transcript in the SIS keeping in mind the end goal to give understudies guidance in the matter of what courses they should take in the following semester and additionally give their graduation status. Another framework encompassing PHP, MySQL and Email innovation is displayed by reference [29] which again utilizes database questions to gather all related understudy and course data for the motivations behind producing a rundown of suggested courses to be taken in the following semester. A comparative framework is additionally appeared in reference [30] whereby designers utilized Wxpython close by an entrance database to convey a work area answer for encouraging postgraduate understudies. Intelligent Advanced Automated Systems (IAAS): AAS can be very viable and deliver palatable outcomes. Notwithstanding, the database questions used to produce such outcomes can be very intricate and asset escalated. Moreover, the standards inside exhorting arrangements that represent program structure and college directions are often investigated, which would then be able to require the need to change the SQL questions which go about as principles overseeing the framework's usefulness. A more down to earth approach, advancing change and simple support would be utilizing master framework innovation to deal with the tenets that represent the exhorting framework. Such frameworks that give this usefulness, like that of AAS are beginning as Intelligent Advanced Automated Systems and research demonstrated this was the most supported approach while making prompting answers for establishments. Such frameworks were seen to

utilize different thinking systems to accomplish their proper outcomes. One, for instance, demonstrated how Case-Based Reasoning (CBR) was utilized to build up a framework that prescribed an appropriate major to students in light of contrasting their understudy data against comparable chronicled cases [26]. Many university in Kurdistan Regoin Goverments starting to develop their online system for teaching processes [31].

2.1 The Traditional Academic Advising System Proecess

The advisory process starts with the understudy filling (or refreshing) a paper-based shape sketching out the courses officially taken (assuming any) by semester, with the relating grades acquired. This speaks to their prompting profile and consequently should be kept and kept up all through their whole scholarly life. The shape would likewise have remarks made by past counsels demonstrating what exhortation was given. On meeting with an understudy, the counsel recovers the understudy's transcript from the Student Information System (SIS) to confirm that the data in the frame is precise. He at that point utilizes a 'bottom-up' strategy, mapping the understudy's finished courses against those required for the understudy's program of study. The course postings are generally taken from references, for example, staff handbooks and departmental gifts and are utilized to find what courses the understudy should take in the up and coming semester. For situations where understudies have finished a semester of courses and just need another set to endeavor for the up and coming semester, the exhorting procedure closes following course proposal. For extraordinary cases affected by outside variables, be that as it may, extra time is required for counselors to take in the understudy's circumstance and perform the more subjective examination before relating adequate exhortation to the understudy. The figure 1 below the current process.
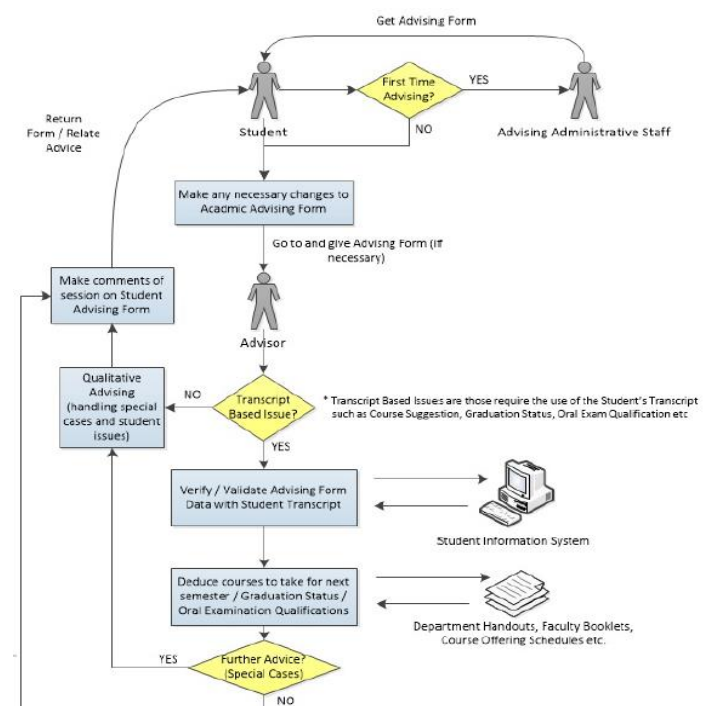

Figure 1 *Tradtional Advising course selection system*

3 Methodology

We have been developing an online course selection system for all types of universities in the   Kurdistan Regional Government. This System helps the students to choose which type of study the want according to these criteria Study part evening or morning, Average mark, Cost, Students baccalaureate study type. The system has been developed by using PHP and MySql database, it is an online course selection system.   Our system will help administrators in ministry of higher education and the students to select between public and private universities. Figure two shows the main page of this online course selection system.

Figure 2 *Online course selection system*

The Figure2 shows that the the system database has all private and public all educational the institute of ministry of higher education and scientific research. The students can filter from 5 different categories study type, degree, students study branch, Annual grade for baccalaureate, and cost of the study. The output of the system will shows the educational institute's name, college, department, study type, study major and the annual cost for the study. These information has surveyed from interviewing many students and many heads of departments and will help a lot for making the decision easier and more accurate for the students and safe much time. Figure 3 shows the output for the system.

Figure 3 *Online course selection system outputs*

In Figure 4 shows in details how the students can search for their course according to the criteria he select.

Figure4 *student Search in course selection system outputs*

4 Conclusion

In this research, we have been answering the requirement for administration of ministry of higher education and undergraduate student. The system helps them to easily search for the current course, according to specific creature that used in Kurdistan Region Government in all educational instutes. The main struggle for the ministry of higher education and the students is absence of main general system that contain all information of all public and private educational institutes in KRG, so this system help to overcome this issue. The Course selection system is intended to improve the degree review process, track degree necessities for all understudies, tailor scholastic gets ready for particular understudies, and create a rundown of prerequisites an understudy has fulfilled.Before the prompting module was actualized, consultants utilized preprinted structures, pencils, and pens to track understudy scholarly advance and advance toward culmination of graduation necessities. This manual following of scholastic prerequisites was exceptionally tedious, consigning counsels to "agent" status and limiting the expert part of guides on campus.One of the most essential parts that prompting programming can play is arranging for counselors to perform "higher request" exhorting. The procedure of scholastic exhorting incorporates the accompanying measurements: investigation of life objectives, investigation of professional objectives, program decision, course decision, and booking courses. Frequently, because of time limitations and extensive prompting loads, guides just have enough time to deal with understudies' course decisions and planning amid their exhorting arrangements. Exhorting programming can possibly enable understudies to deal with their course decisions and booking of courses, hence enabling scholarly counselors to spend prompting arrangements focusing on investigating the understudies' life and profession objectives with regards to choosing a major.To address the issues and requests of the present assorted understudy populace, a guide must invest quality energy with every understudy, becoming acquainted with every individual's expectations, fears, and dreams keeping in mind the end goal to help the understudy in accomplishing an inevitable life and career.It takes after that formative directing or exhorting is concerned not just with a particular individual or professional choice, yet additionally with encouraging the understudies' levelheaded procedures, ecological and relational cooperations, social mindfulness, and critical thinking, basic leadership, and assessment abilities. Meeting these grandiose objectives takes a lot of time in light

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of the fact that, in this worldview, the counselor and understudy are basically partners.Another favorable position of prompting programming bundles is that they enable understudies to have a feeling of possession and control in their course decisions. The customer server form and will be accessible over the Internet on Web programs, empowering understudies to get to their reviews in a more easy to understand and intuitive way. By making exhorting programming accessible on the Internet, understudies can really see their advance toward graduation from anyplace. Understudies are more agreeable when they comprehend what they should achieve and what their relative advance is toward accomplishing their scholarly objectives.

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