UMM AL-QURA UNIVERSITY

ARTIFICIAL INTELLIGENCE

PROJECT
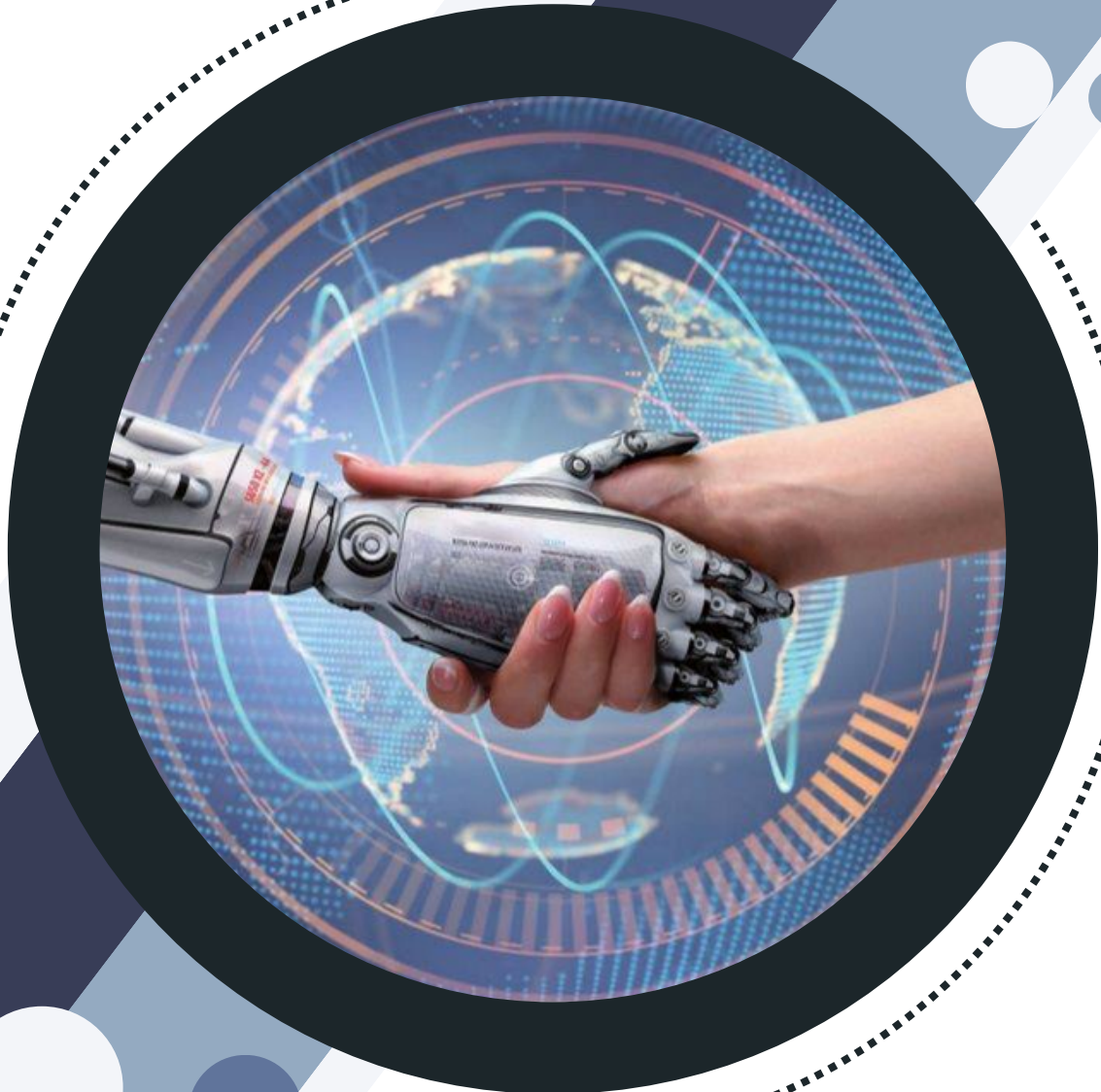
Supervised by

Dr.Amirah Alharbi

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About The Idea :

Choosing a major is a significant decision for college students, and it can be challenging to make the right choice. With so many options available, students often struggle to identify their interests, strengths, and career goals. To address this challenge, we have developed an expert system designed to help students choose the best major based on their personality, values, passions, and what they are interested in.

The Tree Diagram :
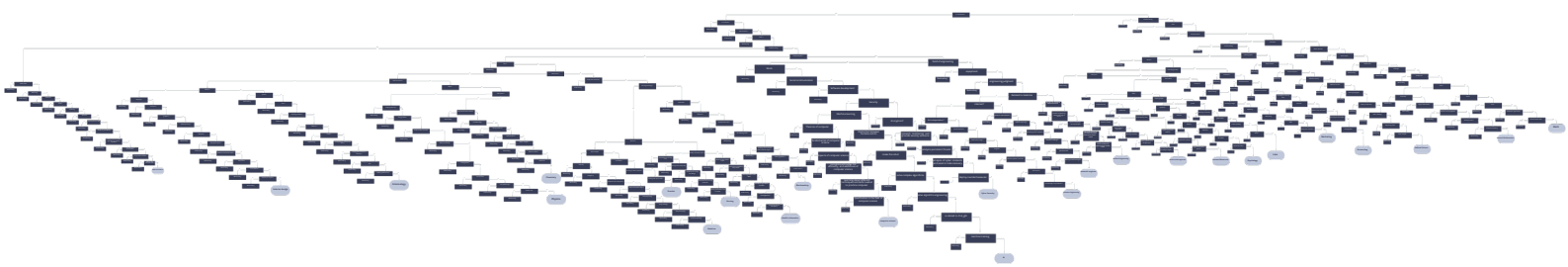
The Code :

```prolog
go:-hypothesize(S),
 write('I guess that the specialty is:'),
 write(S),
 nl.

hypothesize(math) :-math,!.
hypothesize(actuarial_mathematics) :-actuarial_mathematics,!.
hypothesize(political_science) :-political_science,!.
hypothesize(accouting) :-accouting,!.
hypothesize(markting) :-markting,!.
hypothesize(law) :-law,!.
hypothesize(psychology) :-psychology,!.
hypothesize(human_resource) :-human_resource,!.
hypothesize(business_mange) :-business_mange,!.
hypothesize(medical_engineering) :-medical_engineering,!.
hypothesize(network_engineer) :-network_engineer,!.
hypothesize(aviation_engineering) :-aviation_engineering,!.
hypothesize(cyber_security) :-cyber_security,!.
hypothesize(ai) :-ai,!.
hypothesize(computer_science) :-computer_science,!.
hypothesize(biochemistry) :-biochemistry,!.
hypothesize(health_informatics) :-health_informatics,!.
hypothesize(nursing) :-nursing,!.
hypothesize(dentist) :-dentist,!.
hypothesize(medicine) :-medicine,!.
hypothesize(chemistry) :-chemistry,!.
hypothesize(physics) :-physics,!.
hypothesize(criminology) :-criminology,!.
hypothesize(interior_design) :-interior_design,!.
hypothesize(marine_science) :-marine_science,!.


hypothesize(unknown).
```

```prolog
/*specialty identification rules and the verify is meaning of question */
/*there is a cut off quieston*/
math:-

theoretical,problem_solving,learn,communcation,calculation,details_attention,data_analysis,mathematics,
challenge,possibilities,
 verify(count),
 verify(charts),
 verify(proof),
 verify(satisfaction_right_answer),
 verify(career_involves_math).

actuarial_mathematics:-

theoretical,problem_solving,learn,communcation,calculation,details_attention,data_analysis,mathematics,
challenge,possibilities,
 verify(investments),
 verify(logical_mathematical),
 verify(financial_risk_management),
 verify(working_in_banks),
 verify(financial_consulting).

political_science:-

theoretical,problem_solving,learn,communcation,critical_thinking,following_news,read_research,accept_v
iewpoints,interest_history,different_cultures,
 verify(learning_languages),
 verify(ability_to_memorize),
 verify(public_speaking),
 verify(supporting_issues),
 verify(event_analysis).

accouting:-

theoretical,problem_solving,learn,communcation,critical_thinking,decision,accounting_entities,investment
,macroeconomics,financial_transactions,
 verify(knowledge_accounting_rules),
 verify(enter_tax),
 verify(related_money_and_banks),
 verify(accounting_administration),
 verify(average_zakat).

markting:-

theoretical,problem_solving,learn,communcation,critical_thinking,decision,persuasion,sales_admin,comm
erce,product_mange,
 verify(markting_strstegic),
 verify(markting),
 verify(advertising),
 verify(sales),
 verify(dealing_with_customers).

law:-

theoretical,problem_solving,learn,communcation,critical_thinking,decision,persuasion,office,helping_peo
ple,justice,
 verify(working_in_courtoom),
 verify(good_listener),
 verify(public_speaking),
 verify(brave).
```

psychology:-
theoretical,problem_solving,learn,communcation,critical_thinking,decision,persuasion,office,helping_people,sympathy,
verify(caring_about_emotions),
verify(learning_about_memory),
verify(studying_the_behaviors_of_others),
verify(study_how_to_perception_things),
verify(learning_about_mental_disorders).

human_resource:-
theoretical,problem_solving,learn,communcation,critical_thinking,decision,persuasion,office,creative,leadership,
verify(career_development),
verify(organising_business_methods),
verify(compensation_systems),
verify(suggest_employment_policies).

business_mange:-
theoretical,problem_solving,learn,communcation,critical_thinking,decision,persuasion,office,creative,leadership,
verify(economic_studies),
verify(skills_related_to_various_administrative_functions),
verify(running_a_business),
verify(putting_right_person_in_the_right_place),
verify(making_plans_and_bullding_strategies).

medical_engineering:-

practical,technical_skills,learn,problem_solving,study_computer,field_of_engineering,equipment,engineering_judgment,related_to_medicine,medical_advancement,
verify(combines_engineering_skills_and_biological_science),
verify(use_ai_in_making_a_clinical_decision),
verify(use_engineering_to_produce_solutions_that_meet_health_needs),
verify(ability_to_develop_and_conduct_an_appropriate_health_trial).

network_engineer:-
practical,technical_skills,learn,problem_solving,study_computer,field_of_engineering,equipment,engineering_judgment,
verify(internet),
verify(network_maintenance),
verify(network_improving),
verify(controlling_internal_networks),
verify(network_settings),
verify(determine_network_permissions),
verify(building_networks_designs).

aviation_engineering:-
practical,technical_skills,learn,problem_solving,study_computer,field_of_engineering,equipment,engineering_judgment,air_transportation,aircraft_structure,
verify(learn_about_defense_technologies),
verify(studying_engines),
verify(learning_about_electrical_systems_in_aircraft),
verify(studying_fluid_science),
verify(learning_aircraft_design_and_production).

cyber_security:-
practical,technical_skills,learn,problem_solving,study_computer,work,social_communication,software_development,security,encryption,
verify(network_monitoring_and_provide_security_solutions),
verify(analysis_persistent_threats),
verify(analysis_of_cyber_incidents_and_assist_in_data_recovery),
verify(deploy_countermeasures).

ai:-

practical,technical_skills,learn,problem_solving,study_computer,work,social_communication,software_development,machine_learning,interaction_with_humans,
verify(make_robot),
verify(solve_complex_algorithms),
verify(solve_algorithm_engineering),
verify(is_related_to_chat_gbt),
verify(machine_training).

```
computer_science:-

practical,technical_skills,learn,problem_solving,study_computer,work,social_commun
ication,software_development,theories,fundamental,
 verify(aspects_of_computer_science),
 verify(recognize_and_judge_the_efficiency_and_usefulness_of_computer_science),

verify(learning_about_different_techniques_and_skills_needed_to_practice_computer)
,
 verify(qualification_in_the_field_of_computer_science).

biochemistry:-
practical,technical_skills,learn,problem_solving,labs,health_care,study_of_human_bo
dy,learning_toxicology,dna_work,learning_about_chemical_reactions,
 verify(studying_how_biomolecules_work),
 verify(studying_how_microbiology_work),
 verify(studying_communication_within_cells_and_organs),
 verify(learning_about_genetics),
 verify(studying_how_proteins_work).

health_informatics:-
practical,
technical_skills,learn,problem_solving,labs,health_care,study_of_human_body,record
s,
 verify(develop_treatment_plans),
 verify(determine_patients_needs),
 verify(interviews_with_healthcare_and_patients),
 verify(training_health_care_staff ),
 verify(developing_medical_records ),
 verify(health_information_management),
 verify(improving_clinical_outcomes).

nursing:-
practical,
technical_skills,learn,problem_solving,labs,health_care,study_of_human_body,record
s,
 verify(comprehensive_nursing_care),
 verify(strong_sense_of_empathy),
 verify(awareness_of_nursing_knowledge),
 verify(standards_of_the_nursing_profession),
 verify(dealing_with_different_kind_of_people).

dentist:-
practical,technical_skills,learn,problem_solving,labs,health_care,study_of_human_bo
dy,dental_helth,patient,good_hand_eye,responsibility,
 verify(working_with_your_hand),
 verify(working_in_close_people),
 verify(oral_helth),
 verify(sight_of_blood).

medicine:-
practical,technical_skills,learn,problem_solving,labs,health_care,study_of_human_bo
dy,anatomy,emergency,anesthesia_and_resuscitation,
 verify(study_orthopaedic_surgery),
 verify(study_physiology),
 verify(study_histology),
 verify(study_embryology),
 verify(study_pharmacology).
```

chemistry:-
practical,technical_skills,learn,problem_solving,labs,natural_science,report,interactions,compositionof_the_material,manufacturing,
 verify(mixing_solutions),
 verify(periodic_table),
 verify(matter_changes),
 verify(states_of_matter),
 verify(electrons).

physics:-
practical,technical_skills,learn,problem_solving,labs,natural_science,report,studying_electricity,energy_science,study_the_laws_of_motion,
 verify(theory_of_relativity),
 verify(study_galaxies),
 verify(law_of_power),
 verify(the_speed_of_light),
 verify(newton_laws).

criminology:-
practical,technical_skills,learn,problem_solving,labs,motives,justice,laws,collecting_evidence,patterns,
 verify(studying_about_crimes),
 verify(investigation_to_uncover_the_facts),
 verify(studying_the_behavior_of_criminals),
 verify(studying_the_impact_of_crime_in_life),
 verify(studying_bioforensics).

interior_design:-
practical,technical_skills,learn,problem_solving,labs,designing,furniture,graphics,spatial_planning,materials,
 verify(styling_the_internal_objects),
 verify(learning_about_esthetics_of_the_environment),
 verify(learning_about_renovation_types),
 verify(ability_to_create_color_palettes),
 verify(studying_about_harmony_in_objects).

marine_science:-
practical,
technical_skills,learn,observation,monitoring,deduction,patient,exploring,research,written_and_oral_skills,
 verify(study_of_pollutants),
 verify(ready_to_work_outside_regardless_of_weather_condition),
 verify(love_marine_environment),
 verify(enjoy_marine_science),
 verify(work_in_the_maritime_field).

```
c* ---------------------------------------------------*/
/*classification rules */
theoretical:-verify(theoretical_and_does_not_require_a_laboratory),!.
problem_solving:-verify(practical_applications_to_solve_real_problem),!.
learn:-verify(the_desire_to_learn_and_keep_pace_with_development),!.
communcation:-verify(possess_communcation_skills_and_work_in_team_spirit),!.
calculation:-verify(ability_to_solve_complex_calculation),!.
details_attention:-verify(good_attention_to_detail),!.
data_analysis:-verify(data_analysis_and_interpretation),!.
mathematics:-verify(numbers_and_their_operations),!.
challenge:-verify(being_faced_with_difficulties),!.
possibilities:-verify(something_could_realistically_happen),!.
critical_thinking:-verify(strong_analytical_and_critical_thinking_abilites),!.
following_news:-verify(keeping_up_with_current_events),!.
read_research:-verify(read_research),!.
accept_viewpoints:-verify(accept_other_people_point_of_view),!.
interest_history:-verify(interest_history),!.
different_cultures:-verify(accept_and_deal_with_different_cultures),!.
decision:-verify(making_decision),!.
persuasion:-verify(persuade_others_to_support_your_ideas),!.
accounting_entities:-verify(study_the_types_of_accounting_entities),!.
investment:-verify(investment_study),!.
macroeconomics:-verify(study_changes_in_macroeconomics),!.
financial_transactions:-verify(study_the_effects_financial_transactions),!.
sales_admin:-verify(study_of_sales_admin),!.
commerce:-verify(deal_with_commerce),!.
product_mange:-verify(study_how_product_mange),!.
office:-verify(requiras_sitting_at_an_office),!.
helping_people:-verify(helping_and_guiding_people),!.
justice:-verify(learning_how_to_ensure_justice),!.
sympathy:-verify(sympathy_with_others),!.
creative:-verify(requires_innovation_and_creative_thinking_skills),!.
leadership:-verify(directing_people_towards_the_correct_ways_of_doing_works),!.
practical:-verify(application_of_concepts_and_practice),!.
technical_skills:-verify(technical_skills),!.
study_computer:-verify(studies_computers),!.
field_of_engineering:-verify(field_of_engineering),!.
equipment:-verify(there_is_equipment_and_its_use),!.
engineering_judgment:-verify(use_engineering_judgment_on_experimental_results),!.
related_to_medicine:-verify(related_to_medicine),!.
medical_advancement:-verify(striving_for_medical_progress),!.
work:-verify(understand_how_things_work),!.
social_communication:-verify(seeking_continuesd_social_contact),!.
software_development:-verify(software_development_and_improvement),!.
air_transportation:-verify(learning_about_air_transportation),!.
aircraft_structure:-verify(studies_aircraft_structure),!.
security:-verify(important_to_maintain_secure_communication),!.
```

```prolog
encryption:-verify(useing_cryptography_to_save_data),!.
machine_learning:-verify(how_does_machine_learning_work),!.
interaction_with_humans:-verify(studying_how_to_make_machines_interact_with_humans),!.
theories:-verify(application_of_the_theory_of_computing_sciences),!.
fundamental:-verify(studies_computer_basics),!.
learning_toxicology:-verify(study_and_learn_toxicology),!.
dna_work:-verify(learning_about_how_dna_works),!.
learning_about_chemical_reactions:-verify(learning_about_chemical_reactions),!.
labs:-verify(requires_presence_in_laboratories),!.
health_care:-verify(health_care),!.
study_of_human_body:-verify(study_of_human_body),!.
records:-verify(record_patient_notes),!.
anatomy:-verify(anatomy_study),!.
emergency:-verify(dealing_with_emergency_situations),!.
anesthesia_and_resuscitation:-verify(anesthesia_and_resuscitation),!.
natural_science:-verify(study_of_natural_sciences),!.
report:-verify(give_description_of_something),!.
interactions:-verify(study_of_chemical_reactions),!.
compositionof_the_material:-verify(compositionof_the_material),!. /**/
manufacturing:-verify(producing_goods_in_large_numbers),!.
research:-verify(doing_research),!.
studying_electricity:-verify(studying_electricity),!.
energy_science:-verify(energy_science),!.
study_the_laws_of_motion:-verify(study_the_laws_of_motion),!.
motives:-verify(study_of_motivations),!.
laws:-verify(learning_how_to_enforce_the_laws),!.
collecting_evidence:-verify(collecting_evidence),!.
patterns:-verify(study_the_patterns_of_crimes),!.
designing:-verify(designing_ability),!.
furniture:-verify(learn_how_to_organize_furniture),!.
graphics:-verify(implementing_creative_graphics),!.
spatial_planning:-verify(learning_about_spatial_planning),!.
materials:-verify(studying_materials),!.
observation:-verify(ability_to_observe),!.
monitoring:-verify(watching_or_noticing_particular_things),!.
deduction:-verify(answer_by_thinking_about_the_known_facts),!.
exploring:-verify(passion_for_discovering_things),!.
written_and_oral_skills:-verify(written_and_oral_skills),!.
patient:-verify(requires_patience_and_endurance),!.

/*how to ask question*/
ask(Question):-
 write('Does the specialty have the following attribute:'),
 write(Question),
 write('?'),
 read(Response),
 nl,
 ((Response==yes;Response==y)
 ->
assert(yes(Question));
assert(no(Question)),fail).
 :-dynamic yes/1,no/1.
 verify(S) :-
 (yes(S)
 ->
 true;
 (no(S)
 ->
 fail;
 ask(S))).
```

The Refrences :

psychology :
https://www.uni-bamberg.de/en/psychology/studies/typical-questions-in-psychology/ **(University of Bamberg's)**
https://www.effatuniversity.edu.sa/Arabic/academics/Undergraduate/CoSH/Pages/psy.aspx **(Bachelor of Science in Psychology, Affah University)**

Interior Design
https://www.iau.edu.sa/ar/colleges/college-of-design/programs/bachelor-of-interior-design **(Bachelor of Interior Design from Imam Abdul Rahman University)**
https://www.dah.edu.sa/en/academics/hsda/programs/Pages/Interior-Design.aspx **(Dar Al-Hekma University)**
https://uqu.edu.sa/dart_intd/AboutUs **(Umm Al-Qura University)**

Biochemistry
https://www.mcgill.ca/biochemistry/about-us/information/biochemistry **(McGill University)**
https://www.ut.edu.sa/ar/Faculties/science/Department-Biochemistry/Pages/default.aspx**(Tabouk-university)**

Aviation Engineering
https://courses.leeds.ac.uk/f414/aeronautical-and-aerospace-engineering-meng-beng **(University of Leeds)**
https://www.snhu.edu/about-us/newsroom/stem/what-is-aeronautical-engineering**(Southern-University)**
https://www.lboro.ac.uk/study/undergraduate/courses/aeronautical-engineering-beng/ **(Loughborough University)**

Criminal Science
https://www.aiuniv.edu/degrees/criminal-justice/articles/how-to-choose-a-criminal-justice-specialization**(American Intercontinental University)**
https://www.nu.edu/degrees/professional-studies/programs/master-forensic-sciences/**(National University)**

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Actuarial science and Mathematical Financial:
برنامج الرياضيات المالية والعلوم الأكتوارية - الرياضيات - كلية العلوم | جامعة أم القرى (uqu.edu.sa)
الرياضيات الاكتوارية والمالية | الاخبارية (ksu.edu.sa)
معلومات عن تخصص الرياضيات الاكتوارية | المرسال (almrsal.com)

Human Resources:
تخصص إدارة الموارد بشرية (kfu.edu.sa)
الخطة الدراسية (pnu.edu.sa)

Network engineer:
Network Engineer (for9a.com) - الوصف الوظيفي لـ مهندس شبكات
مهندس شبكات (saudieng.sa)
Imam Abdulrahman Bin Faisal University (iau.edu.sa) قسم الشبكات والاتصالات |

Health informatics:
ماهو تخصص المعلوماتية الصحية (easyunime.com)
برنامج البكالوريس في المعلوماتية الصحية (seu.edu.sa)
YouTube - تخصص المعلوماتية الصحية - د.عبدالله الزير
قسم المعلوماتية الصحية (طلاب وطالبات) (kfu.edu.sa)

Marine Science:
Marine Science (for9a.com) - العلوم البحرية
كلية علوم البحار - نبذة تاريخية عن الكلية (kau.edu.sa)
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The Refrences :

Math
http://sciences.ksu.edu.sa/ar/node/10988
https://un-uces.org/index.php/2013-04-10-09-48-18/2013-04-28-07-18-36/2013-04-28-07-19-24/2015-11-17-07-52-30

dentist
https://bu.edu.sa/web/faculty-of-dentistry/bachelor-of-dental-surgery-and-medicine
https://www.iau.edu.sa/ar/colleges/college-of-dentistry/programs/bachelor-of-dental-surgery

chemistry
https://units.imamu.edu.sa/colleges/science/sciences/chemist/Documents/LEARNING%20OUTCOMES-Chemistry.pdf

Law
https://www.for9a.com/careers/category/%D8%A7%D9%84%D9%82%D8%A7%D9%86%D9%88%D9%86
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The Refrences :

Marketing:

https://www.qu.edu.qa/sites/ar_QA/business/about-us/college/learning-outcomes/Marketing_LO

Accouting:

https://ufa.alraziuni.edu.ye/posts/%D9%85%D8%AE%D8%B1%D8%AC%D8%A7%D8%AA-%D8%AA%D8%B9%D9%84%D9%85-%D8%A8%D8%B1%D9%86%D8%A7%D9%85%D8%AC-%D8%A7%D9%84%D9%85%D8%AD%D8%A7%D8%B3%D8%A8%D8%A9

AI:

https://www.philadelphia.edu.jo/ar/benchmarks-dsai

Medicine:

https://www.menofia.edu.eg/med/FacSubjects/ar

Physics:

https://www.iau.edu.sa/ar/colleges/college-of-science-and-humanities-jubail/programs/bachelor-of-science-in-physics-and-renewable-energy

The Refrences :

Computer science :
- the Saudi electronic university : برنامج البكالوريوس في علوم الحاسب الآلي (https://seu.edu.sa/caic/ar/bachelor-programs/bachelor-of-science-in-computer-science/)
- Dar Al-Hekma University: بكالوريوس علوم الحاسب في السعودية - تخصص علوم الحاسب (https://www.dah.edu.sa/ar/academics/hsec/programs/Pages/Computer-Science.aspx)
- Shaqra University: بلو | جامعة شقراء (https://www.su.edu.sa/ar/colleges/college-computing-and-information-technology-shaqra/department-computer-science/bachelor-computer-science-program/plo)
- Al Baha university: بكالوريوس علوم الحاسب - كلية علوم الحاسب وتقنية المعلومات برنامج - Albaha University (https://bu.edu.sa/web/faculty-of-computer-science-and-information-technology/bachelor-of-computer-science)
- Princess Noura University: http://pmcraportfe01.ads.pnu.edu.sa/ar/Faculties/computerscience/Computer/pages/brief.aspx
- Fahd bin Sultan University : علوم الحاسب (https://arabic.fbsu.edu.sa/index.php?option=com_content&view=article&id=215&Itemid=379)

Cyber security:
- King Saud University: http://ascs.ksu.edu.sa/ar/node/788
- Umm Al Qura University: برنامج الأمن السيبراني - كلية الحاسبات | جامعة أم القرى (https://uqu.edu.sa/cis/123474)
- Amman Arab University : تخصص الامن السيبراني | Amman Arab University
(https://www.aau.edu.jo/ar/academics/faculty-computer-science-and-informatics/tkhss-alamn-alsybrany) - Princess Sumaya University : بكالوريوس الأمن السيبراني - جامعة الأميرة سمية للتكنولوجيا (https://psut.edu.jo/ar/program/cyber-security-bsc)
- Imam Abdul Rahman bin Faisal University: بكالوريوس الأمن السيبراني والتحري الرقمي | Imam Abdulrahman Bin Faisal University (https://www.iau.edu.sa/ar/colleges/college-of-computer-science-and-information-technology/bachelor-of-science-in-cyber-security-and-digital-forensics-cys)
- Sharjah University : https://www.sharjah.ac.ae/ar/academics/Colleges/CI/dept/cep/Pages/Master-of-Science-in-Cybersecurity-Engineering.aspx

Medical engineering:
- Princess Noura University :
http://pmcraportfe01.ads.pnu.edu.sa/ar/Faculties/CollegeOfEngineering/BiomedicalEngineeringProgram/Pages/Brief.aspx
- King Faisal University : قسم الهندسة الطبية الحيوية - عن البرنامج (https://www.kfu.edu.sa/ar/Colleges/AhsaEngineering/Pages/Biomedical-About.aspx)
- Nahda University : هندسة طبية - Nahda College (https://nahda.edu.sd/ar/%D9%87%D9%86%D8%AF%D8%B3%D8%A9-%D8%B7%D8%A8%D9%8A%D8%A9/)
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- Sulaiman Al Rajhi University : برنامج التمريض - Sulaiman Alrajhi University | Sulaiman Alrajhi University (https://sr.edu.sa/site/ar/programs/%D8%A8%D8%B1%D9%86%D8%A7%D9%85%D8%AC-%D8%A7%D9%84%D8%AA%D9%85%D8%B1%D9%8A%D8%B6/)
- Majmaah University : الخطة الدراسية لقسم التمريض | Majmaah University (https://m.mu.edu.sa/ar/colleges/college-of-applied-medical-sciences/2218)
- University of Jeddah: كلية العلوم الطبية التطبيقية - الرئيسية - قسم التمريض (https://fams.uj.edu.sa/Pages-nursing-main.aspx)
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- Shaqra University : رسالة البرنامج | جامعة شقراء (https://www.su.edu.sa/ar/colleges/collage-applied-medical-sciences-dawadmi/nursing-department/dean-letter)

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