Faculty of engineering Ain Shams University
International Credit Hour Program
Computer Engineering and Software Systems Program

Graduation Project Proposal Form

Project Serial	# To be completed by the Course Coordinator
Project Title	**Computational modelling to diagnose and assess the risk of cardiovascular disease**
Supervisor(s)	Dr Walaa AbdelHamid
Teacher Assistant (if any)	N/A
Sponsoring Company (if any)	N/A
Number of Students	5

Names/IDs of Students

1. Abdullah Tamer Adel Abdelhamied	1901080
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Project Description

Cardiovascular diseases are diagnosed and assessed through mostly non-invasive methods such as ECGs (Electro-cardiograms), blood tests, ultrasounds(Echo-cardiograms), CT scans (Computed Tomography), stress tests and personal patient history. However, the risk of cardiovascular disease can't always be assessed by cardiologists in many cases. Common examples of this are cancer and rheumatoid arthritis patients. We want to develop a model that can be used on patients with cardiac risk.

Project Objectives

- Basis for risk assessment of cardiovascular disease. Does the patient require immediate and urgent interference?
- Trials for a potential web application that employs the computational model diagnosis.
- Cost effective and non-invasive methods for risk level prediction

Required Prior Skills

- Shared literature: index.xlsx
- Data Preprocessing: Tabular Data / Image Data: Use python reporting and data analysis / Use deep learning models or APIs from references or published repos of competitions.
- Model Pretraining: Trial of already existing machine learning and deep learning models or networks. Trials should be assessed and compared based on estimated speed and accuracy. Frameworks may be introduced.

- Model Establishment: After comparison, the best model will be finetuned. Study model design and finetuning. Two networks are expected, a base with medical data only and the other with personal patient data in addition to the base. This prepares for the working stage.

Deliverables with estimated time plan (Semester 1)

- Data Preprocessing: due on 15th Oct extended to 30th Oct due to much unfinished image analysis work
- Model Pretraining: due on 10th- 13th Nov
- Model Establishment: due on 1st Dec

Deliverables with estimated time plan (Semester 2)

- Model Working: expected to be due on 10th Feb.
- Predictor/Model Analysis and Error Estimation: expected to be due on 11th Feb.
- Limitations: expected to be due on 13th Feb
- Conclusion and Further Discussion: expected to be due on 13th Feb