

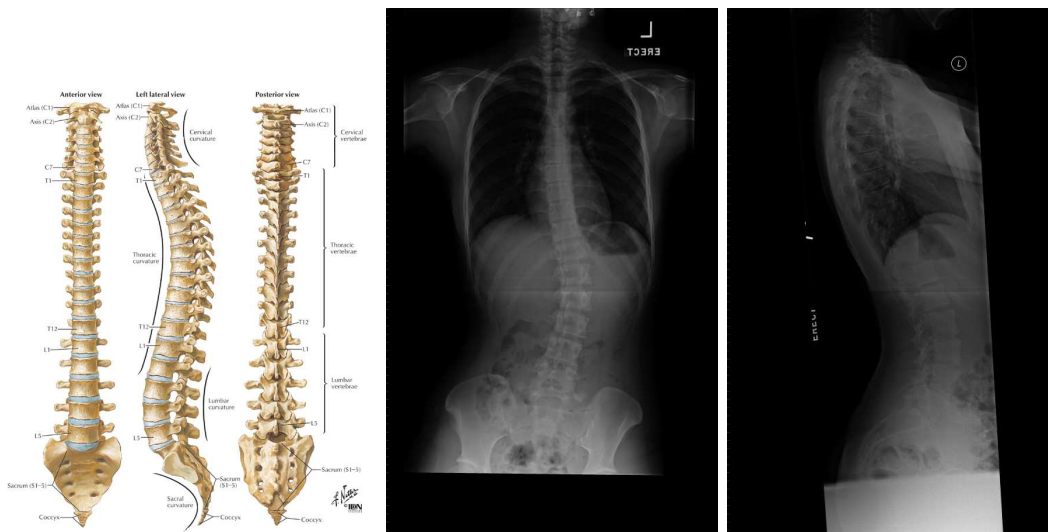
National University of Singapore
School of Computing

CS6240 Multimedia Analysis
Problem Solving Assignment (Option 2)

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Your Visual Computing Company recently ventures into the application domain of medical image processing and analysis. Being the Chief Computer Scientist, your task is to put together a team to perform registration of a 3D spine model to the spine in x-ray images. You examine sample x-ray images and observe the following characteristics:

- X-ray images are complex and noisy. Some parts of the spine are not visible while other pixels can be confused as the spine.
- The spine of different patients look similar but vary in fine details such as size and detailed shape.
- The spine is made of rigid vertebrae that rotate slightly about their joints. This gives the flexibility of the spine.



Assignment problems:

- Design an algorithm for registering a 3D model of the spine to that in x-ray images. The algorithm should work for both frontal and side views. It does not need to register to both the frontal and side views simultaneously. Explain how and why your algorithm solves the problem.
- Design a performance measure for assessing the performance of your algorithm.