

Proposition accompanying the thesis

Dynamic Analysis of X-ray Angiography for Image Guided Coronary Interventions

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1. Layer separation improves the visibility of coronary arteries in X-ray angiograms, especially for scenarios with low vessel contrast. (*This thesis, Chapter 2 and 3*)
2. Layer separation facilitates information processing in X-ray angiography, such as extraction of respiratory motion surrogate and detection of contrast inflow. (*This thesis, Chapter 4 and 5*)
3. Dynamic coronary roadmapping enables visual guidance for cardiologists to manipulate interventional tools during PCI procedures without having to use additional contrast agent. (*This thesis, Chapter 6*)
4. Deep learning makes accurate and real-time image guidance with X-ray angiography possible. (*This thesis, Chapter 5 and 6*)
5. Temporal information serves as a cue to link different frames instead of treating each X-ray image independently. (*This thesis, Chapter 1 and 7*)
6. Deep learning is, like anything else we might consider, a tool with particular strengths, and particular weaknesses. (*Gary Marcus*)
7. Developing a system that truly assists clinicians requires much more efforts on understanding their daily job than minimizing a loss function.
8. Better understanding of the nature of imaging data and how they have been annotated helps to interpret the performance of machine learning models.
9. Your algorithm does not need to be perfect, others will fix it later. (*Larry Zitnick*)
10. To know what you know and what you do not know, that is true knowledge. (*Confucius, 551-479 BC*)
11. Accepting the failure is the first step to turn it into success.