Support of open science, does not mean acceptance of plagiarism.

Ziv

Blatant example:

Excerpt from:
"FRACAS: A System for Computer-Aided Image-Guided Long Bone Fracture Surgery", L. Joskowicz, C. Milgrom, A. Simkin, L. Tockus, Z. Yaniv, *Computer Aided Surgery*, Vol. 3(6), pp. 271-288, 1998.

Although inexpensive and readily available, fluoroscopy has several important limitations. Fluoroscopic images are static, two-dimensional (2D), uncorrelated projections of moving spatial structures. Significant skills are required by the surgeon to mentally recreate the spatiotemporal intraoperative situation and maintain hand–eye coordination while performing surgical gestures. The surgeon's reduced capability leads to positioning errors and complications in a non-negligible number of cases.

Because the images are static and their field of view is narrow, frequent use of the fluoroscope is necessary, leading to significant cumulative radiation exposure to the surgeon. Each minute of exposure (about 60 shots) produces 4 rads of radiation, the equivalent of one computed tomography (CT) study[32]; many procedures require up to 30 min of exposure. Fluoroscopic images also show significant geometric distortion of up to several millimeters and varying exposure between shots, precluding their use for quantitative measurements and accurate navigation.

Excerpt from:
"Virtual plate pre-bending for the long bone fracture based on axis pre-alignment", B. Liu, X. Luo, R. Huang, C. Wan, B. Zhang, W. Hu, Z. Yue, *Comput. Med. Imaging Graph.*, Vol. 38(4), pp. 233-244, 2014.

Although inexpensive and readily available, fluoroscopy has several important limitations. Fluoroscopic images are static, two-dimensional (2D), uncorrelated projections of moving spatial structures. Significant skills are required by the surgeon to mentally recreate the spatiotemporal intraoperative situation and maintain hand–eye coordination while performing surgical gestures. The surgeon's reduced capability leads to positioning errors and complications in a non-negligible number of cases. And because the images are static and their field of view is narrow, frequent use of the fluoroscope is necessary, leading to significant cumulative radiation exposure to the surgeon [14–16]. Each minute of exposure (about 60 shots) produces 4 rads of radiation, the equivalent of one computed tomography (CT); many procedures require up to 30 min of exposure. Fluoroscopic images also show significant geometric distortion of up to several millimeters and varying exposure between shots, precluding their use for quantitative measurements and accurate navigation.

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More Subtle Example:

Excerpt from:
"Localizing spherical fiducials in C-arm based cone-beam CT", Z. Yaniv, *Med. Phys.*, Vol. 36(11), pp. 4957-4966, 2009.

C-arm based cone-beam CT (CBCT) is a three dimensional (3D) in situ imaging modality. It provides images that have a spatial resolution similar to that obtained with diagnostic CT, but with lower discrimination between tissue types and a smaller spatial extent. Figure 1 illustrates these differences.

More recently, improvements in flat panel detector technology have resulted in improved tissue type discrimination,enabling its introduction into clinical interventions dealing with soft tissue [1-3]. For interventions using an image-guided navigation system, this modality can potentially simplify the procedure workflow with 3D imaging and intervention carried out at the same location.

A typical image-guided navigation workflow consists of the following steps: (1) Place fiducials on patient, (2) acquire a 3D image in an imaging suite, (3) transfer patient to interventional suite, (4) register image and patient space, and (5) navigate.

As CBCT provides in situ imaging, it can potentially be used for registrationless navigation [4-6], streamlining the clinical workflow to only two steps: (1) Acquire a 3D image and (2) navigate. This is possible as the 3D image is acquired in situ, allowing us to replace the intraoperative registration step with a one-time calibration. This calibration relates image space to a fixed reference frame that can be detected by the navigation system's tracking device. Figure 2(a) shows the known and estimated transformations relevant for this approach. In this manner, the navigation system transfers tool locations from patient space to image space via the known transformation between the fixed reference frame and the image space. The only requirement is that the fixed reference frame be positioned such that it can be detected by the tracker.

Excerpt from initial version of a workshop paper published in 2011 (title and authors intentionally not given):

A typical CT image-guided navigation workflow consists of the following steps: (1) Place fiducials on patient, (2) acquire 3D image in an imaging suite which matching the pre-surgery information to the patient's real anatomy, (3) transfer patient to interventional suite, (4) register image and patient space, and (5) navigate.

C-arm cone-beam CT (CBCT) is a 3D in situ imaging modality [1]. It provides images that have a spatial resolution similar or higher to that obtained with diagnostic CT, but with lower discrimination and a smaller spatial extent. Compared with conventional CT-based image-guided surgery, it could reduce the complexity of a procedure's workflow. Because both imaging and intervention are carried out at same location, there is no need to transfer patient from imaging suite to the intervention suite.