Chair's Message

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The UCLA Department of Radiological Sciences is actively participating in accelerating the pace of innovation in machine learning and deep learning (ML/DL). The radiology profession having been adroit in adapting to new hardware and software technology, now has the opportunity to expand in the ML/DL era. Previous adaptations often replaced radiological physical tasks, but upcoming adaptions involve replacing cognitive tasks rather than physical tasks. This is a bit more complicated in order to balance simultaneous disruptive and sustaining ML/DL effects.

While some ML/DL cognitive feats appear highly intelligent, they are really just very sophisticated statistical guesses based on past correlations. ML/DL intelligence is bounded by its training on large data-sets of past correlations. Current ML/DL's theory of knowledge is based on iteratively feeding prodigious amounts of "big data" into chiliads of logical processors to reach "intelligent decisions." This works well for "pattern reading" cognitive tasks, hence its applicability to radiology. This training process compresses in time the years radiologists dedicated to correlations that become imaging expertise. Radiologists will need to understand ML/DL technology, but more importantly they will need to know when and when not to employ it.

While ML/DL is impressive, without being Luddites we should ponder Daniel Yankelovich's quote (1972): "There is a deeply hubristic arrogance in the reduction of complex processes to statistics."

An important side effect of the ML/DL era is the relative increase in the value of human interaction. Interventional radiology in moving image-guided treatments from mere highly technical procedures to personalized, direct care of individual patients has acquired this human interaction. The Department's thriving clinic-based practice is testimony to that value. In diagnostic radiology, a key human interaction is with referring physicians who represent the best interest of their patients. There is now an increasing trend for patients to want to interact directly with diagnostic radiologists, because superb diagnostic imaging is recognized as being important if not critical to their care. In our Department and in the radiology profession as a whole, more direct contact and expert interaction with our patients will be key to how our services are valued by patients, by other physicians, and by entire healthcare systems. ®

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