Over the last ten years, Computer-Aided Diagnostic (CAD) schemes have been developed for the automated detection of lesions and also the characterization of normal and abnormal patterns in order to improve the diagnostic accuracy and the consistency of radiologists' image interpretations. Computer output would be used as "second opinions" prior to radiologists' final decisions. In breast imaging, CAD schemes include the automated detection of masses and clustered microcalcifications in mammograms and breast images from other modalities. In chest radiography, CAD schemes include the detection of nodules, interstitial infiltrates, cardiomegaly, pneumothoraces, and asymmetries in conventional and/or CT images of the thorax. Other areas of CAD include the analysis of stenotic lesions in angiograms and the analysis of risk of fracture and osteoporosis in bone radiographs. In this lecture, the basic concept of CAD and some examples applied to chest radiography and mammography will be presented together with emphasis on the potential impact on diagnostic radiology and medical physics. In addition, recent results obtained with an intelligent mammography workstation will be discussed.

Educational Objectives:
1. Understand the basic concept of computer-aided diagnosis
2. Understand the potential of CAD in radiology
3. Understand the broad application of CAD in radiology

K. Doi is a shareholder in R2 Technologies, Inc. (Los Altos, CA). It is the University of Chicago Conflict of Interest Policy that investigators disclose publicly actual or potential significant financial interest which would reasonably appear to be directly and significantly affected by the research activities.