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Abstract for Machine Learning Workshop 2017

A review will be presented on the progress made under STMD/Game Changing Development Program Funding towards the development of a Medical Decision Support System for augmenting crew capabilities during long-duration missions, such as Mars Transit. To create an MDSS, initial work requires acquiring images and developing models that analyze and assess the features in such medical biosensor images that support medical assessment of pathologies. For FY17, the project has focused on ultrasound images towards cardiac pathologies: namely, evaluation and assessment of pericardial effusion identification and discrimination from related pneumothorax and even bladder-induced infections that cause inflammation around the heart. This identification is substantially changed due to uncertainty due to conditions of fluid behavior under space-microgravity. This talk will present and discuss the work-to-date in this Project, recognizing conditions under which various machine learning technologies, deep-learning via convolutional neural nets, and statistical learning methods for feature identification and classification can be employed and conditioned to graphical format in preparation for attachment to an inference engine that eventually creates decision support recommendations to remote crew in a triage setting.