ABSTRACT

A method and system of non-destructive structural inspection of a wall, including: providing a first input to a first deep neural network; determining an imaging result based on a first output of the first deep neural network; determining a 1-D UWB signal sequence based on the imaging result and the 2-D UWB signal matrix; acquiring a second output of a second deep neural network; and responsive to the second output having one or more anomalies relative to a baseline component: determining a nature of an in-wall element corresponding to at least one of the one or more anomalies; and determining a location of the at least one of the one or more anomalies based on the imaging result. The first input may be a 2-D UWB signal matrix acquired by a probe across a wall surface. The imaging result is determined independently of one or more predetermined parameters of the wall. The second deep neural network is configured to receive a second input based on the 1-D UWB signal sequence.

(Fig. 5)