1163-35-1590 **Shyla R Kupis*** (skupis@g.clemson.edu), Clemson University Martin Hall, M-306, Clemson, SC 29634, **Vincent Barra** (vincent.barra@isima.fr), Aubiere, France, and **Taufiquar Khan** (taufiquar.khan@uncc.edu), Charlotte, NC. *Machine Learning Applications to the Electrical Impedance Tomography Inverse Problem.* Preliminary report.

Electrical impedance tomography (EIT) is a non-invasive and radiation-free imaging modality for the electrical conductivity distribution of a body using a set of electrodes to measure voltages on the boundary. We address the exponentially ill-posed and highly sensitive EIT inverse problem using machine learning applications. We solve the forward problem using convolutional neural networks and the inverse problem using deep neural networks. Our machine learning algorithm is then trained against a set of randomly simulated data using the complete electrode model for the forward problem with inclusions of various sizes at different locations. Our findings are then compared to the recovered solutions from a modified Gauss-Newton method. (Received September 15, 2020)