# **IEEE JOURNAL ON MULTISCALE AND MULTIPHYSICS** COMPUTATIONAL TECHNIQUES A PUBLICATION OF THE IEEE MICROWAVE THEORY AND TECHNOLOGY SOCIETY.

THE IEEE ANTENNAS AND PROPAGATION SOCIETY, AND THE IEEE ELECTROMAGNETIC COMPATIBILITY SOCIETY

#### Special Section on

**Deep Learning Based Forward** and Inverse Electromagnetic Characterization

## Expected online publication: 2024 Volume

The 2024 volume of the IEEE Journal on Multiscale and Multiphysics Computational Techniques (IEEE J-MMCT) will include a special section dedicated to 'Deep Learning-based Forward and Inverse Electromagnetic Characterization'. Recent advances in artificial intelligence and deep learning (DL) techniques have drastically affected the pace and innovation in many branches of computational sciences and engineering. Particularly in applied and computational ZHANG a electromagnetics (EM), state of the art DE techniques have been widely applied to a plethora of forward and inverse EM problems. Such applications have been transformative for a variety of purposes, including reduced-order and consurrogate modeling for reduced computational cast investigation for imaging, detection, and classification, as well as - synthesis and discovery. With the help of the DL techniques, forward inverse generative design and Ge EM characterization is now doa of an eye, which has been a utopia when only traditional physics-based characterization has never been performed as fast and accurately as forward solvers existed. Moreo achievyl py y PL cor\_iques\_Pris/s. lestronalised 2000 itigskiits pai<u>tti</u>esi atensicateering model. hievements and pioneering ompi studies in applying DI to hnic me and inv terization. Tancurar attention will be paid to 100000 graph neural networks, convolutional neural applications of the popular DL algorithms, including networks," recurrent neural 2networks, 5 tong short-ter ork perceptrons, autoencoders, 219 ielectronal protection adversarial networks rks. In specific, the section oencode ınd ques an The forward and inverse EM lau w ted to: uasi-static, and full-wave analyses And difficult of the second se sics hManalyses is a the descent state of the second state of iging, non-destructive testing, and geophysical exploration wit, and photonic device design and optimization IT FACE SVITTICSIZE and optimization values to the the second of the second visin here and the permit a promiting ty of the h) Wireless communication optimization to many an analysis of the second s DR Electromagnetic interference and comparing an birty at a we we we and in reading and the second meeting and the second and the i) and other and adheter parameters me han igath dhangedi i shabhethis tahle we and the same man same hol well thought in the same hole we have a same we are the same hole well and the s method be the same and the sam that this that this is subbadd is for the litit or abautimetakion reductive. For the IV. 2D NVM2DONUNERROWLESXAMPLES IV. 2D NOMERICOUNSIGNMEDICAMPLES FDTD mETGOD we under live disputible disponent approach A. 2D Southersteinessent instander in the Coordination of the Coordinatio of the Coordination of the Coord permittivfisfonttbackgcounsersagnouse autonnanteausersagnous cal 2, respectlyelspowerselselselsfaltagatashtrggatass stippabasche sou term, whichtis.lookiektistoraetastastast bet destanophtasionaphtasional doar monotories and the source of t additionaldditioned mensorycionstorycirenitestoredintenacaliate data Comparis Comparisons that we will an appropriate of the second second and the second second and the second second second and the second length is the unit of the stand the plant of the stand of the stand of the standard standard in the standard standard in the standard standard in the standard standard in the standard standard standard template cannot be and  $N_m$  = 2000 pitcle into the period of the view process is Please be aware that your contribution should be prepared as any other regular (x, y, t), then softime (putpus, #,) and two inditived side endowed 50 metals and the inditived side standard in the reference of the softime of the inditional softime of the softime of by these by the setting in the set of the set of the set of the setting of the se V. CONCUSIONCLUSION The agreathentsbecment the weed the predicted ne subles and subles The agreedine agreedine agreeding and the structure and a structure of the structure of the

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Submissions are accepted any time, but no later than February 29, 2024.

If you have any questions, you can contact the Editor-in-Chief (Prof. Costas Sarris at <u>eic-jmmct@ieee.org</u>), or the Guest Editors:

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