OAK RIDGE NATIONAL LABORATORY
Managed by UT-Battelle for the Department of Energy

Multi-Dimensional Highly Adaptive Kernel Based Waveforms

Disclosure Number

200501563

Technology Summary

What is taught in this invention is a Multi-Dimensional Highly Adaptive Kernel Based Waveform and method to construct, design, describe, and adapt waveforms for robust communications that utilizes kernels, kernel methods and kernel based signal processing, which can be classified as support vector machines (SVM) and algorithms, in the original and transform domains that can utilize a plurality of signal/feature space dimensions, e.g., phase, time, frequency, amplitude, coding, directionality. This invention also describes a method of determining the optimal parameters for a single waveform, or a plurality of waveforms across multiple feature space dimensions and layers of a protocol stack simultaneously. The distinct advantage of this approach is that by using kernels we can handle very complex high-dimensional nonlinear feature spaces with the elegance and simplicity of linear mathematical methods which allows us to take advantage of complex algorithms used for nonlinear pattern recognition, regression or feature extraction with simple linear algebraic manipulation.

Inventor

BUCKNER, MARK A

Engineering Science & Technology Div

Licensing Contact

SPEIGHT II, MELVIN D
UT-Battelle, LLC
Oak Ridge National Laboratory
Room 143, 4500N, MS: 6196
1 Bethel Valley Road
Oak Ridge, TN 37831

Office Phone: (865) 241-6564
E-mail: DSPEIGHT@ORNL.GOV