**Velocity Gradient Model Enhanced PIDL**

* The repository consists of Python implementation of the velocity gradient model enhanced physics-informed deep learning.
* The related article for the same is 'Velocity Gradient Enhanced Physics Informed Neural Networks for Traffic State Estimation'
* The model is validated on simulated datasets exhibiting various traffic flow scenarios like the phantom traffic jams due to localised perturbation to an initially homogeneous traffic flow, shock waves and rarefaction waves
* The NGSIM density and speed data are used for vvalidating the model on the real-world dataset. NGSIM\_US101\_Density\_Data.txt - Vehicle Density on US-101 Highway Segment, between 7:50 am and 8:35 am, NGSIM. (Source: Dr. Allan Avila - https://github.com/Allan-Avila/Highway-Traffic-Dynamics-KMD-Code)