Translational AI Center (TrAC) Seminar Spring 2024

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https://iastate.zoom.us/j/95263587232?pwd=K1BVcURvWExFb3pUT000NlRwdFZsZz09

HARVEST: High-Performance Artificial Vision Framework for Expert Labeling using Semi-Supervised Training

Abstract

Three valuable crop scouting use cases are to provide i) recommendations of optimum rate and timing of nitrogen, ii) identifying plant disease incidence & severity followed by recommending treatment options, and iii) predicting yield to inform a farmer's grain marketing activities. While these use cases appear to be within the capabilities of current compute resources and deep learning algorithms, they still require significant effort, resources, and time from end users to collect and label data, train DL models quickly and with high-performance to classify such images. Furthermore, domain experts may lack the technical knowledge to perform these steps. We take on this challenge and present a HARVEST. HARVEST will facilitate the creation and deployment of end-to-end DL solutions for any computer vision-based classification use case. HARVEST takes advantage of the High-Performance MVAPICH MPI middleware for accelerating Semi-supervised model training on modern CPU and GPU-enabled high-performance computing systems to significantly reduce the data-labeling and model training bottlenecks. HARVEST also provides an interactive interface and a simple pipeline requiring no prior DL or HPC experience to create and deploy tailored DL solutions for different use cases.

Short Bio

Hari Subramoni is an Assistant Professor in the Department of Computer Science and Engineering at the Ohio State University, USA, since August 2022. He has published over 150 papers in international journals and conferences related to these research areas. He has been actively involved in various professional activities in academic journals and conferences. Recently, Dr. Subramoni is doing research and working on design and development for of MVAPICH2 (High Performance MPI over InfiniBand, iWARP and RoCE) and MVAPICH2-X (Hybrid MPI and PGAS (OpenSHMEM, UPC and, UPC++)) software packages. He is a member of IEEE and ACM.