

# PVL: An Object Oriented Software Library for Parallel Signal Processing

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*Real-time signal processing consumes the majority of the world's computing power. Increasingly, programmable parallel microprocessors are used to address a wide variety of signal processing applications (e.g. scientific, video, wireless, medical, communication, encoding, radar, sonar and imaging). In programmable systems the major challenge is no longer hardware but software. Specifically, the key technical hurdle lies in mapping (i.e., placement and routing) of an algorithm onto a parallel computer in a general manner that preserves software portability. We have developed the Parallel Vector Library (PVL) to allow signal processing algorithms to be written using high level Matlab like constructs that are independent of the underlying parallel mapping. Programs written using PVL can be ported to a wide range of parallel computers without sacrificing performance. Furthermore, the mapping concepts in PVL provide the infrastructure for enabling new capabilities such as fault tolerance, dynamic scheduling and self-optimization. This presentation discusses PVL with particular emphasis on quantitative comparisons with standard parallel signal programming practices.*

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