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Isao Yamada* (isao@sp.ce.titech.ac.jp), 2-12-1-S3-60, Ookayama Meguro-ku, Tokyo, 152-8552, Japan, and **Masao Yamagishi** (myamagi@sp.ce.titech.ac.jp), 2-12-1-S3-60, Ookayama Meguro-ku, Tokyo, 152-8552, Japan. *Hierarchical convex optimization by the hybrid steepest descent method with proximal splitting operators.*

In this talk, we demonstrate how the modern proximal splitting operators can be plugged into the hybrid steepest descent method (HSDM) for their applications to the hierarchical convex optimization problems which require further strategic selection of a most desirable vector from the set of all solutions of the convex optimization. The proposed technique can approximate iteratively a viscosity solution of the standard convex optimization problem, where the 1st stage cost function is given as a superposition of multiple nonsmooth convex functions, involving linear operators, while its viscosity solution is a minimizer of the 2nd stage cost function which is differentiable convex function with Lipschitzian gradient. We also present an application of the proposed technique to a certain hierarchical enhancement of the support vector machine. (Received September 14, 2019)