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**Jane J. Ye\*** ([janeye@uvic.ca](mailto:janeye@uvic.ca)), Department of Mathematics and Statistics, University of Victoria, PO BOX 3060 STN CSC, Victoria, BC V8W 2Y2, Canada. *Variational analysis perspective on linear convergence of some first order methods for nonsmooth optimization problems.*

In this work we try to understand linear convergence of some first-order methods such as the proximal gradient method and its variants for minimizing the sum of a smooth function and a nonsmooth function from a variational analysis perspective. We introduce a new analytic framework based on some theories on variational analysis such as the error bound/calmness/metric subregularity. This variational analysis perspective enables us to provide some concrete sufficient conditions for checking linear convergence. By using the new framework we are able to improve some existing results and obtain novel results unknown in the literature. (Received January 24, 2018)