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Abstracts of Short Communications and Posters

Section:

17. Control Theory and Optimization

1991 MS Classification: 90, 65, 60
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Stochastic optimization of discontinuous functions
A problem of minimization of a semicontinuous function F over a compact set $X \subset R^n$ is approximated by a sequence of stochastic optimization problems $\min_{x \in X}[F_\alpha(x) = \mathbf{E}_{y_\alpha} F(x+y_\alpha)]$ with expectation functions $F_\alpha(x)$ epi-converging to F as approximation parameter $\alpha \longrightarrow 0$. For a discontinuous function F an extended mollifier subdifferential is introduced in a compact space of pairs $\overline{R^n} = \{(\mathbf{n}, \rho) | \ \mathbf{n} \in R^n, \ \|\mathbf{n}\| = 1, \ 0 \le \rho \le +\infty\}$ and necessary optimality conditions are formulated. To find local minimums of F_α on X nonconvex stochastic optimization technique is applied. Part of these results is a joint work with Yu. Ermoliev and R. Wets.
References: Yu. M. Ermoliev, V. I. Norkin and R. J-B. Wets, The minimization of semi-continuous functions: Mollifier subgradients, *SIAM J. Contr. and Opt.* , 1 (1995), 149-167.
Yu. M. Ermoliev and V. I. Norkin, On nonsmooth and discontinuous problems of stochastic systems optimization, *European J. of Oper. Res.* **101** (1997), 230-244.