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構造化制約付き最適化問題の効率的な解法の開発と機械学習への応用

§1．研究成果の概要

In this fiscal year, we have considered a class of sparsity-inducing optimization problems with regularizer-compatible constraints (including ordered constraints). Our model covers variants of regression models with ordered constraints such that it can be applied in some real applications. Specifically,

- we have proposed a new algorithm by exploiting the structures of the regularizers and constraints.
- we have provided a theoretical guarantee for our algorithm: subsequence converges to a kind of stationary point we newly proposed, without any commonly used constraint qualification conditions.
- we have tested our algorithm on order-constrained compressed sensing problems, and its outperformance over existing algorithms/models in terms of signal recovery has been shown.
- we have also tested our algorithm on the prediction of ozone concentrations, and the efficiency has also been shown.

This work can be hopefully submitted to an optimization journal in this June.