Invited Talk Abstract

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An Anchored Random Subspace Newton Algorithm

Pierre-Louis Poirion

RIKEN Center for Advanced Intelligence Project

Date	July 28, 2026
Time	11:30–12:00
Session	Session 4
Venue	S102, Lecture Hall, Gong-Guan Campus, NTNU

Abstract

Random subspace methods help mitigate the curse of dimensionality by enabling the computation of inexpensive descent directions for high-dimensional optimization problems. However, this gain in efficiency often comes at the cost of slower convergence. In particular, in the Newton setting, the use of random subspaces generally prevents superlinear convergence.

In this talk, we present a new method that augments the random subspace with an anchor direction designed to better approximate the true Newton direction. We show that this approach restores fast local behavior and prove that the method achieves local superlinear convergence.

Joint work with Haruki Yamakawa and Akiko Takeda