

# Black-Box Optimization: from Climate Change to Audio and Robotics

Simple, robust methods when gradients fail

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Slides: <insert-lab-repo-or-url>

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## RD vs. Other BBO Methods (Qualitative)

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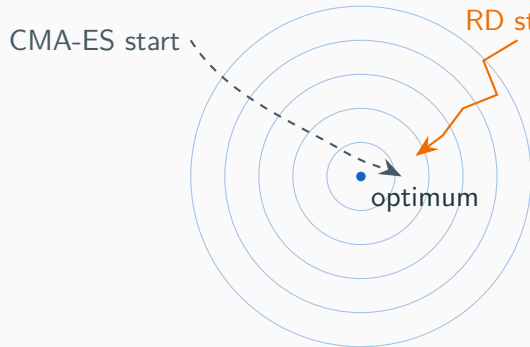
# Live Demo Concept: RD vs. CMA-ES

- **Random Directions (RD):**

- Samples random lines through the space.
- Fast convergence in high dimension with parallel evaluations.
- Trajectory: many short exploratory jumps, gradually shrinking.

- **CMA-ES:**

- Learns covariance of successful steps.
- Trajectory: broad global steps, ellipsoidal search narrowing over time.



Replace this schematic with animated runs or recorded plots if live coding is impractical.

# Audio Applications

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