We want to solve distributed games:

When nodes can autonomously select actions, multiple possible metrics:

Online Signal Detection (Recursive Least Squares),

Online Lagrangian relaxation for sequential learning problem:

(Reg Global vs. Local Regrets)

Number of network connections at each node

(Reg Global)

Node 174 Local

Node 38 Local

Node 53 Local

Node 187 Local

Online Convex Optimization

Network graphs G (V,E): |V| = N.

Network samples

Node 4 Local

Node 38 Local

Node 53 Local

Node 187 Local

Networked Online Convex Optimization

Saddle Point Algorithm

Primal Lagrangian subgradient descent

Dual correction term to approximately enforce local agreement

Dual Lagrangian subgradient ascent

Penalty local duality

Algorithm formulation:

We want to solve distributed games:

When nodes can autonomously select actions, multiple possible metrics:

Uncoordinated Regret

|V| = N.

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