

Finite differences Least Square Methods for HJB using NN

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Annotations

- We are minimizing costs of the form

$$\mathcal{I}(u) = \mathcal{L}(u; g) + \mathcal{R}(u)$$

where

$$\mathcal{L}(u; g) := \int_{\partial\Omega} (u(x) - g(x))^2 dx$$

and

$$\mathcal{R}(u) := \int_{\Omega} \left(\hat{H}(x, D_{\delta}^+ u(x), D_{\delta}^- u(x)) \right)^2 dx.$$

They affirm that **any global minimizer of this cost is a viscosity solution, and that any critical point is a local minimizer**. The second property is more interesting.

- To which lipchitz continuos soluion converge a PINN?

0.1 Questions

- Do all equations of the form

$$H(x, \nabla u^{\varepsilon}(x)) - \varepsilon \Delta u^{\varepsilon}(x) = 0$$

have smooth solutions? Why not just take a very small ε ?