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Filling the Gap between Lower-C^1 and Lower-C^2 Functions

The classes of lower-$C^{1,\alpha}$ functions $(0 < \alpha \leq 1)$, that is, functions locally representable as a maximum of a compactly parametrized family of continuously differentiable functions with α-Hölder derivative, are hereby introduced. These classes form a strictly decreasing sequence from the larger class of lower-C^1 towards the smaller class of lower-C^2 functions, and can be analogously characterized via perturbed convex inequalities or via appropriate generalized monotonicity properties of their subdifferentials. Several examples are provided and a complete classification is given.