J.R. Giles, Scott Sciffer

Fréchet directional differentiability and Fréchet differentiability

Comment.Math.Univ.Carolinae 37,3 (1996) 489-497.

Abstract: Zajíček has recently shown that for a lower semi-continuous real-valued function on an Asplund space, the set of points where the function is Fréchet subdifferentiable but not Fréchet differentiable is first category. We introduce another variant of Fréchet differentiability, called Fréchet directional differentiability, and show that for any real-valued function on a normed linear space, the set of points where the function is Fréchet directionally differentiable but not Fréchet differentiable is first category.

Keywords: Gâteaux and Fréchet subdifferentiability, directional differentiability, strict and intermediate differentiability
AMS Subject Classification: 58C20, 46G05