

Abstract

As the title suggests, the present dissertation deals with the refinements of Jensen-Steffensen and related inequalities. We extend some classical results and give some new refinements of several well known inequalities including Jensen's inequality, Jensen-Steffensen inequality, Hermite-Hadamard inequality, majorization-type inequality, generalized weighted Favard and Berwald inequalities. We also provide the refinements of some companion inequalities to the Jensen's inequality, namely Slater's inequality and the inequalities obtained by M. Matić and J. Pečarić in [44]. We sharpen the lower bounds of the Jensen's functional. Some inequalities in terms of Gâteaux derivatives for convex functions are also provided. Finally, we present not only the generalizations of Hardy-Littlewood-Pólya inequality [26, Theorem 134] but also generalizations of some results given in [8] and [36].