Prologue

The theory of univalent and multivalent functions is an age old branch of mathematics, particularly complex analysis attracting a large number of researchers owing to sheer beauty, its geometrical aspects and a lot of avenues of research work.

Fractional calculus generalizes traditional calculus to non-integer differential and integral orders. The concept of derivative is traditionally associated to an integer; given a function, we can derive it one, two, three times and so on. It can be of an interest to investigate the possibility to derive a function, real number times. Different definitions of fractional derivatives and fractional Integrals (Differ-integrals) are also considered.

Work in this thesis comprises of study of certain aspects of fractional calculus and geometric function theory.

Here we will discuss some analytic and geometric characterizations along with their relationships to different subclasses of analytic functions. It also presents general results of fractional calculus. The basic definitions and useful realizations are presented briefly along with short explanations.

The explanations in this thesis are detailed enough to capture the interest of the curious reader, and complete enough to provide the necessary background material needed to delve further into the subject and explore the research literature given in the references.