Active galactic nuclei (AGN) are centers of galaxies majority of which are $10^2$ to $10^5$ times more luminous than a normal galaxy and show signs of non-thermal activity. Since AGN are very compact and at relatively large redshift, they are non-resolvable by any existing facility. Therefore, understanding their structure and processes responsible for such high energy output is a big challenge. These are now broadly known to be powered by a supermassive black hole (SMBH) accreting matter through a disk surrounding it. An important diagnostic to investigate AGN phenomenon is temporal variability in blazars- a subclass of AGN. The emission in blazars is dominated by non-thermal radiation which is extremely variable at time scales ranging from a few tens of minutes to several tens of years across the whole electromagnetic spectrum (EMS). Rapid flux variability is capable of resolving features close to the central engine. In the present work, we have used variability of blazars to improve our understanding of the AGN in general and blazars in particular. The thesis is organized as follows.

We introduce the AGN phenomena, blazar properties and observational facilities which are used to obtain data at several energy regimes. The data reduction and analysis methods along with statistical techniques used to facilitate extraction of science from the data are also described. To address the microvariability (intra-night variations; INV) and long term variations in optical domain, we have carried out optical observations from the Mt Abu InfraRed Observatory (MIRO), complementing these with data from Steward Observatory, where available. Instances of INV and their time scales are determined for IBL 3C66A and S5 0716+71, duly verified using statistical techniques. The duty cycle of variation (DCV), sizes of the emission regions and possible mechanisms of emissions are discussed. The long-term behaviour of the source brightness, major outbursts and spectral properties of the two sources have been addressed using the entire dataset. The shock-in-jet model appears to be explaining the long term behaviour. We also studied the extent of variability as a function of source brightness and found opposite trends in the two IBLs. Though blazars are valuable sources of information, they become wonderful probes when in outburst. During these outbursts,
source is normally detected across the EMS, providing opportunity to study the correlated variations among different energy bands. Two sources which exhibited unprecedented outbursts during last three years or so, 1ES 1959+650 (HBL) and CTA 102 (FSRQ), were studied using the multiwavelength data from optical observatories, Swift-XRT/UVOT (X-ray/UV/optical), Fermi-LAT(γ-rays) and 15GHz radio data from OVRO. The data were analyzed using standard techniques and multiwavelength light curves were generated. Both sources were at their historically brightest levels with several major outbursts and a number of rapid flares with significant amplitudes. It was possible to put constraints on the sizes of emission regions, distance of the high energy emitting region from the black hole and infer processes responsible for flares. For CTA 102, we used 3-hour binned data to estimate the flux doubling time scale. The spectral energy distributions were constructed to study their spectral behaviour during pre-, post- and flaring periods. We infer that the jet has multiple emission regions in almost all the energy regimes, DCV depends on the duration of monitoring, variations at shorter time scales are stochastic in nature and long term outbursts are probably caused by shock moving down the jet, interacting with plasma over-densities (shocks/knots) or the changes in the viewing angle. The variability amplitudes appear to increase with frequency. The INV and LTV are possibly connected but such inference needs to be strengthened by an extensive study with densely sampled data.