Short Report on Europe visit

In TACL School, I attended the lectures on natural dualities, Priestley spaces, higher order model checking and homotopy theory.

The lectures by Guram Bezhanishvili on duality theory mentioned about dualities in topological spaces and frames. The Sober spaces are in bijection with Spatial frames, and many subcategories of Sober spaces are in bijection with subcategories of Spatial frames. Corresponding to some subcategory of topological spaces, equivalent subcategories in frames are constructed using duality theory, or vice versa. Various new subcategories are given in the process.

Brian Davey presented a particular technique developed by him and Priestley to construct dualities called piggyback technique.

Lectures by Ieke Moerdijk focused on Brown categories and Quillen Model Categories, which are categories with fibrations, cofibrations and weak equivalences, as subclasses of arrows, satisfying extra properties. Various category and homotopy theoretic properties of both the categories were studied.

TACL Conference had number of talks in parallel sessions. I attended talks mostly related to modal logic and category theory. The invited talk on Homotopy Type theory by André Joyal and Topos-theoretic 'bridges' by Olivia Caramello were very interesting. Homotopy type theory talk gave an insight into foundations and univalence axiom. Topos-theoretic bridges highlighted the use of Grothendieck topos as a connecting tool for various branches of mathematics.

Warsaw Visit:

I presented a talk on 'Topos and Quasitopos of rough sets' in Rough Set Theory Workshop. Other talks focused on theoretical and practical applications of Rough sets ranging from Neurology to data mining. I also attended lectures in another conference PREMI (Pattern Recognition and Machine Intelligence), mostly based on applications of rough and fuzzy sets. I interacted with other people working in rough set theory.

I had discussions with Prof. Skowron and Prof. Jankowski on Wisdom technology given by them on the lines of Rasiowa-Pawlak school of Artificial Intelligence. It comprises knowledge sources network, adaptive judgment and interactive processes. It means there is some initial knowledge source database, based on which judgments can be taken, which itself adds to source network giving rise to interactive processes.

In the whole, I have got some references during interactions with various researchers. I would like to study duality theory and check whether similar concept can be used in rough set theory. Wisdom technology and Information system is a new area which I would like to study further as it is a emerging area with wide variety of applications.