Progress in Lifting and Applications in Lower Bounds

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—— **Abstract** ——

Ever since Yao introduced the communication complexity model in 1979, it has played a pivotal role in our understanding of limitations for a wide variety of problems in Computer Science. In this talk, I will present the lifting method, whereby communication lower bounds are obtained by lifting much simpler lower bounds. I will show how lifting theorems have been used to solve many open problems in a variety of areas of computer science, including: circuit complexity, proof complexity, combinatorial optimization (size of linear programming formulations), cryptography (linear secret sharing schemes), game theory and privacy.

At the end of the talk, I will sketch the proof of a unified lifting theorem for deterministic and randomized communication (joint with Arkadev Chattopadyhay, Yuval Filmus, Sajin Koroth, and Or Meir.)