Prof. R. Wattenhofer

# Consensus Number of Objects in Distributed Systems

In a shared-memory distributed system, nodes communicate with each other by performing operations on shared data objects. The power of a system to solve problems depends on the types of shared data objects that are available. Determine whether a given problem can be solved in such an asynchronous distributed system is, therefore, of great importance in the design of distributed systems.

The consensus number is a critical character of objects. An object has consensus number $n$ is $n-$nodes consensus can be solved by using the objects and read/write registers. It represents the computing power of the object.

Another question is followed by the previous one intuitively: Which primitive object types that we need to implement such desired objects and distributed systems.

In this thesis, we will study the shared data objects in asynchronous distributed systems. We will start by understanding the consensus number and computing power of objects. Then we will propose our new algorithms to implement these objects using a given set of primitive object types.

While we already have some ideas about how such algorithms might look, we are interested in your vision and input on how to design such algorithms.

**Requirements:** Prior knowledge in distributed systems, or solid background in algorithm and graph theory. You should be able to read and understand theoretical papers and write formalized proof.

**Interested? Please contact us for more details!**

## Contact

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