

Mathematical Principles of Information Sciences, II: Mathematical Theory of Intuitive Reasoning

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Time: 14:00-15:00 (Time in Beijing)
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Abstract: Started at Hilbert's 1900 program of axiomatizing mathematics, in 1930s, mathematicians including Gödel proposed the definition of "proof" and established the subject of mathematical logic, and more importantly, Turing 1936 proposed a mathematical definition and the machine model of computation. Mathematical logic realizes logical reasoning by rules that can actually be implemented by algorithms. Turing's model captures the essence of the notion of computation and provided the model for the electrical computers after Turing. Computers proved useful in the 20th century, and have been becoming everywhere useful in the 21st century. The new mission of computers now becomes intelligently and massively information processing in the real world. However, the current artificial intelligence is essentially an information processing technology built based on computation. The problems are: 1) computation requires an object function which we don't actually know in information processing, 2) the law of computation is: computation is local, which means that computation fails to realize intuitive reasoning. Human reasoning consists of both logical reasoning and intuitive reasoning, and the combination of the two. A grand challenge is: What is the mathematical theory of intuitive reasoning? In this talk, I will introduce a mathematical theory of intuitive reasoning, built based on my structural information theory.

Speaker Bio: 李昂生，北京航空航天大学教授，国家杰出青年基金获得者，中国科学院百人计划入选者。李昂生教授的主要研究方向为网络空间的信息与计算理论，结构信息论与网络算法，并取得一系列原始创新成果。2016年，他提出结构信息的度量，创立结构信息论，创建信息处理的数学理论。成果解决Brooks2003提出的计算机科学重大挑战性问题，并同时解决Shannon 1953年提出的建立信息的结构理论的重大科学问题。

Chengdu Algorithms and Logic Seminar is a series of online seminars organized by School of Computer Science and Engineering, University of Electronic Science and Technology of China, and School of Computer Science, University of Auckland that aims to promote collaborations in a broad range of topics in algorithms and logic.

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