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### ***Non-MapReduce computing for intelligent analysis of Big Data***

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MapReduce is the most widely used programming model for distributed computing that runs on clusters and clouds. However, when a highly iterative intelligent algorithm implemented in MapReduce runs on a cluster to analyze a big dataset, say in terabytes, it will suffer from the problems of computing inefficiency and data unscalability due to the high costs of data communications between the nodes. To conquer these problems, we propose a Non-MapReduce distributed computing paradigm that can run an iterative algorithm on the nodes of a cluster independently and in parallel without the needs of data communication between the nodes. As a big benefit to industry, it removes the burden for reprogramming sequential algorithms in MapReduce. The Non-MapReduce distributed computing paradigm is enabled by the random sample partition (RSP) data model, the data analysis methods using multiple random samples, and the ensemble learning model. In this talk, I will introduce these new approaches which can make big data computing technologies computationally efficient, scalable to big data, directly execute sequential algorithms in parallel and distributed fashion, and analyze big data without memory limit.

非MapReduce計算大數據智能分析

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MapReduce 是在集群和雲上運行的分佈式計算使用最廣泛的編程模型。

然而，當MapReduce中實現的高度迭代的智能算法在集群上運行以分析大數據集時，例如TB級別的數據集，由於節點之間的數據通信成本高，它會遇到計算效率低下和數據不可擴展的問題。為了克服這些問題，我們提出了一種非 MapReduce 分佈式計算範式，可以在集群的節點上獨立並行地運行迭代算法，而無需節點之間的數據通信。作為對行業的一大好處，它消除了非 MapReduce 中重新編程順序算法的負擔。非 MapReduce 分佈式計算範式由隨機樣本分區（RSP）數據模型、使用多個隨機樣本的數據分析方法和集成學習模型啟用。

在本次演講中，我將介紹這些新方法，它們可以使大數據計算技術具有計算效率，可擴展到大數據，直接以並行和分佈式方式執行順序算法，並在不受內存限制的情況下分析大數據。

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### ***A formalization of Cognitive behavioral therapy in logic based on modal reasoning***

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Cognitive behavioral therapy (CBT) is a common type of talk therapy based on assumption/fact that emotions primarily result from our thoughts, and hence we can release from negative (dysfunctional) emotions by changing our way of reasoning. This therapy has made great successes in treatment of variety of emotional psychological and psychiatric difficulties (Panic, Obsessive Compulsive Disorder, Phobias, Post-traumatic Stress Disorder, Depression, Eating disorders, Sexual Dysfunction, Social Anxiety, Anger and Stress Management, Child behavior problems etc.). Using the fact that the principles of CBT already rely on correct logical cognition, we construct the logic LCBT that formalizes those principles by introducing operators for expression of human desires and putting them in the frame of modal reasoning.

Since it turned out that Kripke worlds naturally present all possible circumstances which one can experience, we use Kripke-like models as corresponding semantics and give sound and complete axiomatic system. It is proved that the corresponding satisfiability and validity problems are decidable.

認知行為療法的形式化

在基於模態推理的邏輯中

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抽象的。 認知行為療法 (CBT)

是一種常見的談話療法，它基於以下假設/事實：情緒主要來自我們的思想，因此我們可以通過改變我們的推理方式來釋放消極（功能失調）的情緒。

該療法在治療各種情緒心理和精神疾病（恐慌症、強迫症、恐懼症、創傷後應激障礙、抑鬱症、進食障礙、性功能障礙、社交焦慮、憤怒和壓力管理、兒童行為問題）方面取得了巨大成功 etc.）。利用 CBT 的原則已經依賴於正確的邏輯思考這一事實，我們構建了邏輯 LCBT，通過引入用於表達人類慾望的運算符並將它們置於模態推理的框架中，將這些原則形式化。

由於事實證明克里普克世界自然地呈現了人們可能經歷的所有可能情況，因此我們使用類克里普克模型作為相應的語義，並給出了完善的公理化體系。

證明相應的可滿足性和有效性問題是可判定的。