

THE LANGUAGE OF COMPUTER SCIENCE

Hear from Turing Award winner Professor Barbara Liskov

We SHARE to inspire and ignite ideas!



ALGORITHMS

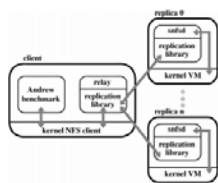


EpiChord: Parallelizing the Chord Lookup Algorithm with Reactive Routing State Management

By Ben Leong; **Barbara Liskov**; Erik D. Demaine (2006)

In the article, a technique for designing a new class of unlimited-state-per-node Distributed Hash Table (DHT) that is able to adapt naturally to a wide range of lookup workloads is described. Using the method, EpiChord, a DHT lookup algorithm, is able to achieve O(1)-hop lookup performance under lookup-intensive workloads.

Source: [Computer Communications](#)



Practical Byzantine Fault Tolerance and Proactive Recovery

By Miguel Castro; **Barbara Liskov** (2002)

The authors presented a new replication algorithm BFT, which can be applied to develop highly available systems that tolerate Byzantine faults. The algorithm is also able to perform well in asynchronous environments such as the Internet.

Source: [ACM Transactions on Computer Systems](#)



Practical Uses of Synchronized Clocks in Distributed Systems

By **Barbara Liskov** (1993)

Synchronized clocks are implemented to improve the performance of distributed systems by reducing communications. This earlier work by Liskov studied various distributed algorithms using synchronized clocks and further explored how the clocks are adopted in these algorithms.

Source: [Distributed Computing](#)

DISTRIBUTED SYSTEMS

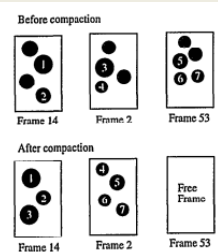


A Technique for Constructing Highly Available Services

By Rivka Ladin; **Barbara Liskov**; Liuba Shrira (1988)

A technique for developing a highly available service for distributed systems is presented, being able to overcome certain semantic constraints. Specific implementation of the technique is demonstrated and results show that the proposed method outperforms other replication techniques.

Source: [Algorithmica](#)



HAC: Hybrid Adaptive Caching for Distributed Storage Systems

By Miguel Castro; Atul Adya; **Barbara Liskov**; Andrew C. Myers (1997)

Here introduces HAC, a novel technique for managing the client cache in a distributed, persistent object storage system. The research outcome indicates that the proposed cache management approach has a better performance over other object storage systems across a wide range of cache sizes and workloads.

Source: [SOSP '97](#)



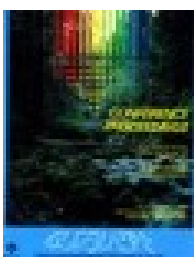
Specifications of Distributed Programs

By **Barbara Liskov**; William Weihl (1986)

In the paper, informal specifications of distributed programs are discussed. The authors demonstrated how to give user-oriented specifications of the functional behavior of programs with performance requirements, and proposed a structure for specifications that distinguishes expected and desirable effects from undesirable ones.

Source: [Distributed Computing](#)

OPERATING SYSTEMS

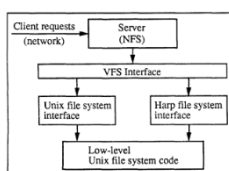


Reducing Cross Domain Call Overhead Using Batched Futures

By Phillip Bogle; **Barbara Liskov** (1994)

The paper introduces a new mechanism that transparently batches possibly interrelated client calls. The authors explained how the mechanism is imbedded in the Thor object-oriented database system, and came up with the results representing the positive performance of the mechanism.

Source: [OOPSLA '94](#)



Replication in the Harp File System

By **Barbara Liskov**; Sanjay Ghemawat; Robert Gruber; Paul Johnson; Liuba Shrira; Michael Williams (1991)

The authors elaborated the design and implementation of the Harp file system, a replicated Unix file system accessible via the VFS interface. Preliminary research shows that the system provides equal or better response time and system capacity than an unreplicated implementation of NFS that uses Unix files directly.

Source: [SOSP '91](#)



The Design of the Venus Operating System

By **Barbara Liskov** (1972)

Liskov discussed the development of the Venus operating system, with a focus on the guiding principles of design. The Venus operating system is an experimental multiprogramming system that allows a few concurrent users on a small computer.

Source: [Communications of the ACM](#)

PROGRAMMING

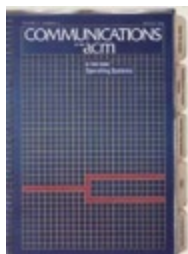


A Language Extension for Expressing Constraints on Data Access

By Anita K. Jones; **Barbara Liskov** (1978)

This article looks into the extension of programming languages to express access constraints on shared data. The proposed solution is able to extend any strongly-typed language, especially for those that support the notion of abstract data types.

Source: [Communications of the ACM](#)

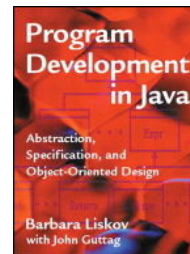


Distributed Programming in Argus

By **Barbara Liskov** (1988)

Argus is a programming language and system aiming to support the implementation and execution of distributed programs. Programmers can make use of Argus to rectify special issues that appear in distributed programs, such as network partitions and crashes of remote nodes.

Source: [Communications of the ACM](#)



Program Development in Java: Abstraction, Specification, and Object-Oriented Design

By **Barbara Liskov**; John Guttag (2000)

The book explores how to build programs that are reliable, easy to maintain, and quick to modify, with a special focus on modular programs. It offers insight on object-oriented program design and component-based software development.

Source: [Safari](#)