

What we were doing in 1988

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SIGCOMM 1988 – 32 papers

- Compare with SIGCOMM 2023 (72 papers)
<https://conferences.sigcomm.org/sigcomm/2023/list-accepted.html>
- Not with NeurIPS 2024 (3584 papers)

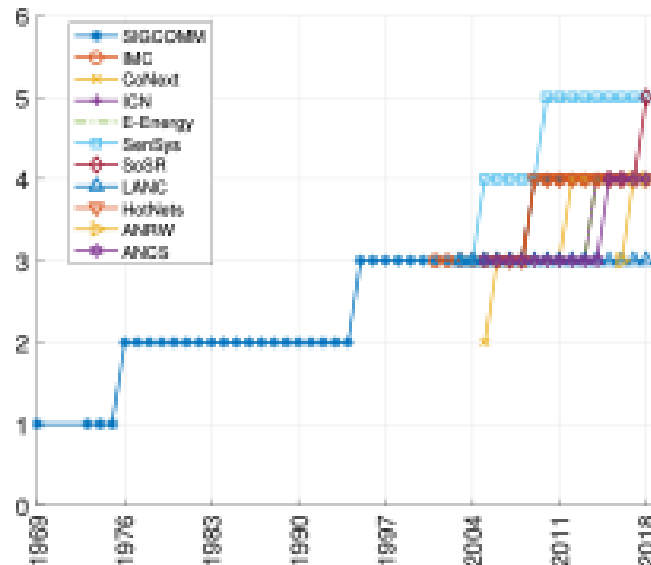


Figure 3: Median number of authors during 1969–2018 in SIGCOMM venues. Collaborative authorship is becoming

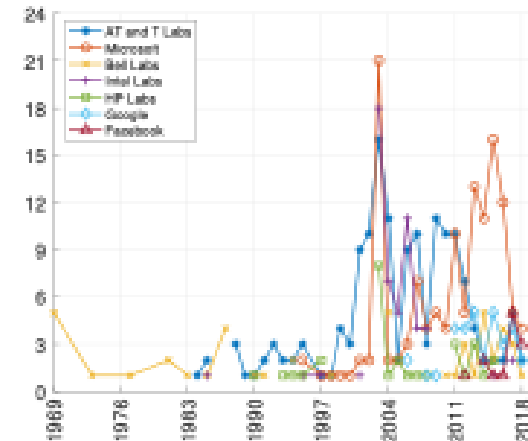


Figure 9: Top research institutes in all SIGCOMM venues based on publication count during 1969–2018 and their temporal development. Note that the line breaks where data is not available. AT&T is a major player in SIGCOMM venues and remains the overall top contributor, but other research institutes (e.g., HP, Intel, Microsoft) have emerged as rising stars. Note that y-axis represents the number of publications of a research lab published across all venues from our dataset.

Topology, Routing, Interconnect, Resource

- Topological analysis of local-area internetworks
- Dynamic bandwidth allocation in a network
- Optical interconnection using ShuffleNet
- The landmark hierarchy: a new hierarchy for routing in very large networks
- Pitfalls in the design of distributed routing algorithms
- Multicast routing in inter networks and extended LANs

Computing Science! OS, PL, Arch

- Design of the x-kernel
- Exploiting recursion to simplify RPC communication architectures
- Service specification and protocol construction for the transport layer
- A network management language for OSI networks
- The design philosophy of the DARPA internet protocols
- The fuzzball
- Development of the domain name system

Hardware & Speed

- Optimizing bulk data transfer performance: a packet train model
- A mesh/token ring hybrid-architecture LAN
- Tree LANs with collision avoidance: protocol, switch architecture, and simulated performance
- An analysis of Memnet—an experiment in high-speed shared-memory local networking
- The VMP network adapter board (NAB): high-performance network communication for multiprocessors
- Circuit switching in multi-hop lightwave networks

Measurement&Methodologies

- A pseudo-machine for packet monitoring and statistics
- Knowledge-based monitoring and control: an approach to understanding behavior of TCP/IP network protocols
- Measured capacity of an Ethernet: myths and reality
- Distributed testing and measurement across the Atlantic packet satellite network(SATNET)
- Experience with test generation for real protocols
- Performance models for Noahnet

Protocols Protocols Protocols

- A multicast transport protocol
- A high performance broadcast file transfer protocol
- Specification and verification of collusion-free broadcast networks
- Delivery and discrimination: the Seine protocol
- A binary feedback scheme for congestion avoidance in computer networks with a connectionless network layer
- Congestion avoidance and control
- A protocol to maintain a minimum spanning tree in a dynamic topology

Where did we go from there...

Table 6: Yearly top keywords in SIGCOMM venues

Year	Keywords
1981	Smart Power Grids, Embedded Systems, Multimedia Systems, Convolutional Codes, Internet Of Things
1987	Embedded Systems, Energy Efficiency, Smart Power Grids, Internet Of Things, Convolutional Codes
1991	Convolutional Codes, Embedded Systems, DNS, TCP, QoS
1993	Energy Efficiency, Smart Power Grids, Energy Utilization, Complex Networks, Wireless Sensor Networks
1994	Embedded Systems, Software-defined Networking, Complex Networks, Social Networking (online), Energy Utilization
1995	Wireless Sensor Networks, Complex Networks, DNS, Openflow, Optimization
1996	Network Architecture, Energy Efficiency, Data Centers, Social Networking (online), Openflow
1997	Wireless Sensor Networks, Embedded Systems, Energy Efficiency, Optimization, Distributed Computer Systems
1999	Embedded Systems, Wireless Sensor Networks, Network Protocols, Electric Network Topology, Computer Operating Systems
2000	Embedded Systems, Wireless Sensor Networks, Network Security, Social Networking (online), Peer To Peer Networks
2001	Embedded Systems, Convolutional Codes, Wireless Sensor Networks, Game Theory, Social Networks
2002	Wireless Sensor Networks, Internet Measurement, Embedding Information, Distributed Computer Systems, Web Services
2003	Wireless Sensor Networks, Distributed Computer Systems, Algorithms, Virtual Reality, Availability
2005	Wireless Telecommunication Systems, Wireless Sensor Networks, Distributed Computer Systems, Policy Internet Networks, Testbeds
2006	Network Protocols, Telecommunication Traffic, Servers, Bandwidth, Mathematical Models
2007	Mathematical Models, Bandwidth, Telecommunication Traffic, QoS, Congestion Control (communication)
2008	Telecommunication Traffic, Digital Watermarking, Society Of Data, Topology, Servers
2009	Quality Of Service, Multimedia Systems, Algorithms, Bandwidth, Multicasting
2010	Multimedia Systems, Algorithms, Network Protocols, Telecommunication Services, User Interfaces
1989	Congestion Control (communication), Telecommunication Traffic, Mathematical Models, Multicasting, Algorithms
1990	Multimedia Systems, QoS, Semantics, Information Systems, Internet Protocols
1992	Multimedia Systems, Digital Storage, Indexing Of Information, Bandwidth, Content Based Retrieval
1996	Performance, Mobile Telecommunication Systems, Optimization, Congestion Control (communication), Asynchronous Transfer Mode
1995	Audio Systems, Computer Graphics, Bandwidth, Information Services, Telecommunication Services
1996	Network Architecture, Network Routing, Topology, Address Space, Credit-based Flow Control
1998	Multimedia Computing, Video Signal Processing, Data Handling, Information Retrieval Systems, Synchronization
1999	Packet Switching, Telecommunication Control, Communication Protocols, High Speed Networks, Congestion Control
1994	Asynchronous Transfer Mode, Service Disciplines, Traffic Congestion, Graph Theory, Propagation Delays
1992	Packet Switching, Broadband Networks, Design Principles, End-End, Gateway-Computer Networks
1989	EDS, Graph Theory, Asynchronous Transfer Mode, Data Transmission, Open Systems Interconnection
1993	Topology, Bandwidth, Local Area Networks, Optical Communication, Congestion Avoidance
1997	Distributed Computer Systems, Natural Resources Management, Resource Allocation, Supercomputers, Back-Jump Networks
1996	Distributed Systems, Transport Protocols, Local Area Networks, Access Control, Application Programs
1995	Distributed Systems, Transport Protocols, Back-Jump Networks, Congestion Avoidance, Data Transmission
1994	Fast Area, Data Transfer, Local Area Networks, Open Systems Interconnection, Reference Modeling
1993	Packet Switching, Access Control, Data Transfer, Gateways (computer networks), Interconnection Networks (packet switching)
1992	Queueing Network Model, Data Link Control, Flow Control, Information Management, Performance Analysis
1991	Network Performance, Queueing Network Model, Complex Networks, Data Link Control, Flow Control
1990	Convolutional Codes, Packet Switching, Open Systems Interconnections, Reference Modeling, Authentication
1989	Data Handling, Information Management, Interconnection Networks (packet switching), Electronic Data Interchange
1997	Gateways (computer networks)
1996	Switching Networks, Available, Address Arrays, Asynchronous Data, Automatic Repeat Request
1997	Argument, Operating System Design, Queueing Theory Details, Broadcast, Shared Alids
1996	Average Delay, Bandwidth Utilization, Connected Networks, Closed Loop Control Systems, Common Carriers
1995	Convolutional Codes, Data Communication Systems, Packet Switching, Packet Networks, Switching Networks



Thanks to Gareth et al for work on the 5 Decades of SIGCOMM biblio paper (where the graphs/tables come from)!

Why should you care?

- The UK has been a leader in networking since the start
 - The University and National support is a major factor
- Much of our science is a beneficiary
 - Data and code and seminars/classes on the net
 - E.g. LHC/CERN, Genome, dare I say AI
- Operational networks deploy in cycles
 - Having extreme demands ahead of extreme dependency is helpful
 - Viz video conferencing from 1988, meant we were ready!