Jeffrey Ullman
Stanford Warren Ascherman Professor of Engineering, Emeritus
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Bio

BIO

Jeff Ullman is the Stanford W. Ascherman Professor of Engineering (Emeritus) in the Department of Computer Science at Stanford and CEO of Gradiance Corp. He received the B.S. degree from Columbia University in 1963 and the PhD from Princeton in 1966. Prior to his appointment at Stanford in 1979, he was a member of the technical staff of Bell Laboratories from 1966-1969, and on the faculty of Princeton University between 1969 and 1979. From 1990-1994, he was chair of the Stanford Computer Science Department. Ullman was elected to the National Academy of Engineering in 1989, the American Academy of Arts and Sciences in 2012, and has held Guggenheim and Einstein Fellowships. He has received the Sigmod Contributions Award (1996), the ACM Karl V. Karlstrom Outstanding Educator Award (1998), the Knuth Prize (2000), the Sigmod E. F. Codd Innovations award (2006), the IEEE von Neumann medal (2010), and the NEC C&C Foundation Prize (2017). He is the author of 16 books, including books on database systems, compilers, automata theory, and algorithms.

ACADEMIC APPOINTMENTS

• Emeritus Faculty, Acad Council, Computer Science

Teaching

COURSES

2021-22

• Program Analysis and Optimizations: CS 243 (Spr)

2020-21

• Bridging Policy and Tech Through Design: CS 184, PUBLPOL 170 (Spr)
Publications

PUBLICATIONS

• Scaling Cryptographic Techniques by Exploiting Data Sensitivity at a Public Cloud
  Mehrotra, S., Sharma, S., Ullman, J. D., ACM
  ASSOC COMPUTING MACHINERY. 2019: 165–67

• Partitioned Data Security on Outsourced Sensitive and Non-sensitive Data
  Mehrotra, S., Sharma, S., Ullman, J. D., Mishra, A., IEEE
  IEEE. 2019: 650–61

• SharesSkew: An algorithm to handle skew for joins in MapReduce
  INFORMATION SYSTEMS
  Afrati, F. N., Stasinopoulos, N., Ullman, J. D., Vassilakopoulos, A.
  2018; 77: 129–50

• Computing marginals using MapReduce
  JOURNAL OF COMPUTER AND SYSTEM SCIENCES
  Afrati, F. N., Sharma, S., Ullman, J. R., Ullman, J. D.
  2018; 94: 98–117

• Report from the Fourth Workshop on Algorithms and Systems for MapReduce and Beyond (BeyondMR’17)
  SIGMOD RECORD
  Afrati, F. N., Hidders, J., Koutris, P., Sroka, J., Ullman, J.
  2017; 46 (4): 44–48

• Report from the third workshop on Algorithms and Systems for MapReduce and Beyond (BeyondMR’16)
  SIGMOD RECORD
  Afrati, F. N., Hidders, J., Re, C., Sroka, J., Ullman, J.
  2017; 46 (2): 43–48

• Efficient and Private Approximations of Distributed Databases Calculations
  IEEE. 2017: 4487–96

• Assignment Problems of Different-Sized Inputs in MapReduce
  ACM TRANSACTIONS ON KNOWLEDGE DISCOVERY FROM DATA
  Afrati, F., Dolev, S., Korach, E., Sharma, S., Ullman, J. D.
  2016; 11 (2)

• Parallel Skyline Queries
  THEORY OF COMPUTING SYSTEMS
  Afrati, F. N., Koutris, P., Suciu, D., Ullman, J. D.
  2015; 57 (4): 1008-1037

• Experiments as Research Validation: Have We Gone Too Far?
  COMMUNICATIONS OF THE ACM
  Ullman, J. D.
  2015; 58 (9): 37-39

• Brief Announcement: Assignment of Different-Sized Inputs in MapReduce
  28th International Symposium on Distributed Computing
  SPRINGER-VERLAG BERLIN. 2014: 536–537

• Fuzzy Joins Using MapReduce
  28th IEEE International Conference on Data Engineering (ICDE)
  Afrati, F. N., Das Sarma, A., Menestrina, D., Parameswaran, A., Ullman, J. D.
  IEEE. 2012: 498–509

• Optimizing Multiway Joins in a Map-Reduce Environment
  IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING
  Afrati, F. N., Ullman, J. D.
  2011; 23 (9): 1282-1298

• Cluster Computing, Recursion and Datalog
  1st International Workshop on Datalog Reloaded (Datalog)
  Afrati, F. N., Borkar, V., Carey, M., Polyzotis, N., Ullman, J. D.
  SPRINGER. 2011: 120–144
• Using views to generate efficient evaluation plans for queries *JOURNAL OF COMPUTER AND SYSTEM SCIENCES*
  Afrati, F. N., Li, C., Ullman, J. D.
  2007; 73 (5): 703-724

• The Lowell database - Research self assessment *COMMUNICATIONS OF THE ACM*
  2005; 48 (5): 111-118

• Querying websites using compact skeletons *20th Symposium on Principles of Database Systems*
  Rajaraman, A., Ullman, J. D.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.2003: 809–51

• A survey of new directions in database systems *8th International Conference on Database Systems for Advanced Applications*
  Ullman, J. D.
  IEEE COMPUTER SOC.2003: 3–3

• Generating efficient plans for queries using views *ACM SIGMOD International Conference on Management of Data*
  Afrati, F. N., Li, C., ULLMAN, J. D.
  ASSOC COMPUTING MACHINERY.2001: 319–30

• Minimizing view sets without losing query-answering power *8th International Conference on Database Theory (ICDT 2001)*
  Li, C., Bawa, M., ULLMAN, J. D.
  SPRINGER-VERLAG BERLIN.2001: 99–113

• Finding interesting associations without support pruning *16th International Conference on Data Engineering (ICDE 2000)*
  Cohen, E., Datar, M., Fujiwara, S., Gionis, A., Indyk, P., Motwani, R., ULLMAN, J. D., Yang, C.
  IEEE COMPUTER SOC.2001: 64–78

• Scalable techniques for mining causal structures *DATA MINING AND KNOWLEDGE DISCOVERY*
  Silverstein, C., Brin, S., Motwani, R., Ullman, J.

• Information integration using logical views *6th International Conference on Database Theory (ICDT 97)*
  ULLMAN, J. D.
  ELSEVIER SCIENCE BV.2000: 189–210

• Answering queries using limited external query processors *15th ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems*
  Levy, A. Y., Rajaraman, A., Ullman, J. D.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.1999: 69–82

• Computing capabilities of mediators *1999 ACM SIGMOD International Conference on Management of Data*
  Yerneni, R., Li, C., Garcia-Molina, H., Ullman, J.
  ASSOC COMPUTING MACHINERY.1999: 443–454

• Optimizing large join queries in mediation systems *7th International Conference on Database Theory (ICDT 99)*
  Yerneni, R., Li, C., Ullman, J., Garcia-Molina, H.
  SPRINGER-VERLAG BERLIN.1999: 348–364

• Information integration using logical views *6th International Conference on Database Theory*
  ULLMAN, J. D.
  SPRINGER-VERLAG BERLIN.1997: 19–40

• Index selection for OLAP *13th International Conference on Data Engineering*
  Gupta, H., Harinarayan, V., Rajaraman, A., ULLMAN, J. D.

• Representative objects: Concise representations of semistructured, hierarchical data *13th International Conference on Data Engineering*
  Nestorov, S., Ullman, J., Wiener, J., Chawathe, S.
  IEEE COMPUTER SOC.1997: 79–90
• Medmaker: A mediation system based on declarative specifications 12th IEEE International Conference on Data Engineering
  Papakonstantinou, Y., GARCIAMOLINA, H., Ullman, J.
  I E E E, COMPUTER SOC PRESS.1996: 132–141

• The database approach to knowledge representation 13th National Conference on Artificial Intelligence (AAAI 96) / 8th Conference on Innovative Applications of Artificial Intelligence (IAAI 96)
  ULLMAN, J. D.
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.1996: 1346–1348

• ARGUMENT REDUCTION BY FACTORING THEORETICAL COMPUTER SCIENCE
  Naughton, J. F., Ramakrishnan, R., Sagiv, Y., ULLMAN, J. D.
  1995; 146 (1-2): 269-310

• A SURVEY OF DEDUCTIVE DATABASE-SYSTEMS JOURNAL OF LOGIC PROGRAMMING
  Ramakrishnan, R., ULLMAN, J. D.
  1995; 23 (2): 125-149

• THE ROLE OF THEORY TODAY ACM COMPUTING SURVEYS
  ULLMAN, J. D.
  1995; 27 (1): 43-44

• A VERSION NUMBERING SCHEME WITH A USEFUL LEXICOGRAPHICAL ORDER 11th International Conference on Data Engineering
  Keller, A. M., ULLMAN, J. D.

• LOGICAL QUERY OPTIMIZATION BY PROOF-TREE TRANSFORMATION JOURNAL OF COMPUTER AND SYSTEM SCIENCES
  Ramakrishnan, R., Sagiv, Y., ULLMAN, J. D., Vardi, M. Y.
  1993; 47 (1): 222-248

• NEW FRONTIERS IN DATABASE SYSTEM RESEARCH LECTURE NOTES IN COMPUTER SCIENCE
  ULLMAN, J. D.
  1992; 653: 87-101

• DATABASE-SYSTEMS - ACHIEVEMENTS AND OPPORTUNITIES COMMUNICATIONS OF THE ACM
  Silberschatz, A., Stonebraker, M., Ullman, J.
  1991; 34 (10): 110-120

• HIGH-PROBABILITY PARALLEL TRANSITIVE-CLOSURE ALGORITHMS SIAM JOURNAL ON COMPUTING
  ULLMAN, J. D., Yannakakis, M.
  1991; 20 (1): 100-125

• A COMPARISON BETWEEN DEDUCTIVE AND OBJECT-ORIENTED DATABASE-SYSTEMS 2ND INTERNATIONAL CONF ON DEDUCTIVE AND OBJECT-ORIENTED DATABASES (DOOD 91)
  ULLMAN, J. D.
  SPRINGER VERLAG.1991: 263–277

• HIGH-PROBABILITY PARALLEL TRANSITIVE CLOSURE ALGORITHMS 2ND ANNUAL SYMP OF THE ASSOC FOR COMPUTING MACHINERY : PARALLEL ALGORITHMS AND ARCHITECTURES (SPAA 90) / AEGER WORKSHOP ON COMPUTING
  ULLMAN, J. D., Yannakakis, M.
  ASSOC COMPUTING MACHINERY.1990: 200–209

• THE INPUT OUTPUT COMPLEXITY OF TRANSITIVE CLOSURE 1990 INTERNATIONAL CONF ON MANAGEMENT DATA
  ULLMAN, J. D., Yannakakis, M.
  ASSOC COMPUTING MACHINERY.1990: 44–53

• AN OPTIMAL SYNCHRONIZER FOR THE HYPERCUBE SIAM JOURNAL ON COMPUTING
  Peleg, D., ULLMAN, J. D.
  1989; 18 (4): 740-747

* ON THE CONVERGENCE OF QUERY EVALUATION JOURNAL OF COMPUTER AND SYSTEM SCIENCES
Afrati, F., Papadimitriou, C. H., Papageorgiou, G., Roussou, A., Sagiv, Y., ULLMAN, J. D.
1989; 38 (2): 341-359

- Efficient Evaluation of Right-Linear, Left-Linear, and Multilinear Rules
  *International Conf on the Management of Data*
  Naughton, J. F., Ramakrishnan, R., Sagiv, Y., ULLMAN, J. D.
  ASSOC COMPUTING MACHINERY.1989: 235–242

- Argument Reduction by Factoring
  *15th International Conf on Very Large Data Bases*
  Naughton, J. F., Ramakrishnan, R., Sagiv, Y., ULLMAN, J. D.

- Efficient Tests for Top-Down Termination of Logical Rules
  *Journal of the ACM*
  ULLMAN, J. D., VANGELDER, A.
  1988; 35 (2): 345-373

- Parallel Complexity of Logical Query Programs
  *Algorithmica*
  ULLMAN, J. D., VANGELDER, A.
  1988; 3 (1): 5-42

- A Communication-Time Tradeoff
  *SIAM Journal on Computing*
  Papadimitriou, C. H., ULLMAN, J. D.
  1987; 16 (4): 639-646

- Algorithms for the Compilation of Regular Expressions into Plass
  *Algorithmica*
  Karlin, A. R., TRICKEY, H. W., ULLMAN, J. D.
  1987; 2 (3): 283-314

- Design Overview of the Nail - System
  *Lecture Notes in Computer Science*
  Morris, K., ULLMAN, J. D., VANGELDER, A.
  1986; 225: 554-568

- Implementation of Logical Query Languages for Databases
  *ACM Transactions on Database Systems*
  ULLMAN, J. D.
  1985; 10 (3): 289-321

- Connections in Acyclic Hypergraphs
  *Theoretical Computer Science*
  Maier, D., ULLMAN, J. D.
  1984; 32 (1-2): 185-199

- System/U - A Database System Based on the Universal Relation Assumption
  *ACM Transactions on Database Systems*
  Korth, H. F., Kuper, G. M., Feigenbaum, J., VANGELDER, A., ULLMAN, J. D.
  1984; 9 (3): 331-347

- On the Foundations of the Universal Relation Model
  *ACM Transactions on Database Systems*
  Maier, D., ULLMAN, J. D., Vardi, M. Y.
  1984; 9 (2): 283-308

- Flux, Sorting, and Supercomputer Organization for AI Applications
  *Journal of Parallel and Distributed Computing*
  ULLMAN, J. D.
  1984; 1 (2): 133-151

- Tools for Template Dependencies
  *SIAM Journal on Computing*
  Fagin, R., Maier, D., ULLMAN, J. D., Yannakakis, M.
  1983; 12 (1): 36-59

- Maximal Objects and the Semantics of Universal Relation Databases
  *ACM Transactions on Database Systems*
  Maier, D., ULLMAN, J. D.
  1983; 8 (1): 1-14
• THE THEORY OF FUNCTIONAL AND TEMPLATE DEPENDENCIES *THEORETICAL COMPUTER SCIENCE*
  Sadri, F., ULLMAN, J. D.
  1982; 17 (3): 317-331

• BOUNDS ON THE SIZE AND TRANSMISSION RATE OF COMMUNICATIONS PROTOCOLS *COMPUTERS & MATHEMATICS WITH APPLICATIONS*
  Aho, A. V., WYNER, A. D., Yannakakis, M., ULLMAN, J. D.
  1982; 8 (3): 205-214

• TEMPLATE DEPENDENCIES - A LARGE CLASS OF DEPENDENCIES IN RELATIONAL DATABASES AND ITS COMPLETE AXIOMATIZATION *JOURNAL OF THE ACM*
  Sadri, F., ULLMAN, J. D.
  1982; 29 (2): 363-372

• THE COMPILATION OF REGULAR EXPRESSIONS INTO INTEGRATED-CIRCUITS *JOURNAL OF THE ACM*
  FLOYD, R. W., ULLMAN, J. D.
  1982; 29 (3): 603-622

• A SIMPLIFIED UNIVERSAL RELATION ASSUMPTION AND ITS PROPERTIES *ACM TRANSACTIONS ON DATABASE SYSTEMS*
  Fagin, R., Mendelzon, A. O., ULLMAN, J. D.
  1982; 7 (3): 343-360

• DEADLOCK-FREE PACKET SWITCHING-NETWORKS *SIAM JOURNAL ON COMPUTING*
  Toueg, S., ULLMAN, J. D.
  1981; 10 (3): 594-611

• EQUIVALENCE OF RELATIONAL DATABASE SCHEMES *SIAM JOURNAL ON COMPUTING*
  Beeri, C., Mendelzon, A. O., Sagiv, Y., ULLMAN, J. D.
  1981; 10 (2): 352-370

• INFERRING A TREE FROM LOWEST COMMON ANCESTORS WITH AN APPLICATION TO THE OPTIMIZATION OF RELATIONAL EXPRESSIONS *SIAM JOURNAL ON COMPUTING*
  Aho, A. V., Sagiv, Y., SZYMANSKI, T. G., ULLMAN, J. D.
  1981; 10 (3): 405-421

• ADEQUACY OF DECOMPOSITIONS OF RELATIONAL DATABASES *JOURNAL OF COMPUTER AND SYSTEM SCIENCES*
  Maier, D., Mendelzon, A. O., Sadri, F., ULLMAN, J. D.
  1980; 21 (3): 368-379

• EQUIVALENCES AMONG RELATIONAL EXPRESSIONS *SIAM JOURNAL ON COMPUTING*
  Aho, A. V., Sagiv, Y., ULLMAN, J. D.
  1979; 8 (2): 218-246

• CODE GENERATION FOR EXPRESSIONS WITH COMMON SUB-EXPRESSIONS *JOURNAL OF THE ACM*
  Aho, A. V., Johnson, S. C., ULLMAN, J. D.
  1977; 24 (1): 146-160

• OPERATIONS ON SPARSE RELATIONS *COMMUNICATIONS OF THE ACM*
  Hunt, H. B., SZYMANSKI, T. G., ULLMAN, J. D.
  1977; 20 (3): 171-176

• NODE LISTINGS FOR REDUCIBLE FLOW GRAPHS *JOURNAL OF COMPUTER AND SYSTEM SCIENCES*
  Aho, A. V., ULLMAN, J. D.
  1976; 13 (3): 286-299

• BOUNDS ON COMPLEXITY OF LONGEST COMMON SUBSEQUENCE PROBLEM *JOURNAL OF THE ACM*
  Aho, A. V., Hirschberg, D. S., ULLMAN, J. D.
  1976; 23 (1): 1-12

• DETERMINISTIC PARSING OF AMBIGUOUS GRAMMARS *COMMUNICATIONS OF THE ACM*
Aho, A. V., Johnson, S. C., ULLMAN, J. D.
1975; 18 (8): 441-452

• COMPLEXITY OF LR(K) TESTING  COMMUNICATIONS OF THE ACM
  Hunt, H. B., SZYMANSKI, T. G., ULLMAN, J. D.
  1975; 18 (12): 707-716

• DYNAMIC MEMORIES WITH RAPID RANDOM AND SEQUENTIAL ACCESS  IEEE TRANSACTIONS ON COMPUTERS
  Aho, A. V., ULLMAN, J. D.
  1974; C 23 (3): 272-276

• LINEAR PRECEDENCE FUNCTIONS FOR WEAK PRECEDENCE GRAMMARS  INTERNATIONAL JOURNAL OF COMPUTER MATHEMATICS
  Aho, A. V., ULLMAN, J. D.
  1972; 3 (2-3): 149-155

• TRANSLATIONS ON A CONTEXT FREE GRAMMAR  INFORMATION AND CONTROL
  Aho, A. V., ULLMAN, J. D.
  1971; 19 (5): 439-?