

# Stanford

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## John Gill

Associate Professor of Electrical Engineering, Emeritus

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### Bio

#### BIO

Gill's research interests are in the areas of computational complexity theory and information theory, including probabilistic computation, lossless data compression, and error correcting codes.

#### ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Electrical Engineering

#### PROFESSIONAL EDUCATION

- PhD, University of California, Berkeley , Mathematics (1972)
- MA, University of California, Berkeley , Mathematics (1969)
- BS, Georgia Institute of Technology , Applied Mathematics (1967)

#### LINKS

- <http://ee.stanford.edu/~gill/>: <http://ee.stanford.edu/~gill/>

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### Publications

#### PUBLICATIONS

- **Fused Fibonacci Like (p,q)-Sequences with Compression and Barcoding Applications** *Conference on Multimedia on Mobile Devices and Multimedia Content Access - Algorithms and Systems VI*  
Agaian, S., Garcia, J., Abdul-Kafi, S., Gill, J. T.  
SPIE-INT SOC OPTICAL ENGINEERING.2012
- **Low-Complexity Non-Uniform Demand Multicast Network Coding Problems** *47th Annual Allerton Conference on Communication, Control, and Computing*  
Koo, J. C., Gill, J. T.  
IEEE.2009: 228–235
- **Lagrangian vector quantization with combined entropy and codebook size constraints** *IEEE TRANSACTIONS ON INFORMATION THEORY*  
Gray, R. M., Linder, T., Gill, J. T.  
2008; 54 (5): 2220-2242
- **Computation Complexity of Comparing Real Numbers**  
Sohangir, S., Gill, J., T.  
2007
- **Quantization with joint entropy/memory constraints** *16th Data Compression Conference*  
Gray, R. M., Gill, J. T.

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- **Quantization with Joint Entropy/Memory Constraints**

Gray, R., M., Gill, J., T.  
2006

- **Improving Gallager's Upper Bound on Huffman Codes Redundancy**

Shen, J., P., Gill, J., T.  
2001

- **A new upper bound on the data expansion of Huffman codes** *IEEE International Symposium on Information Theory*

Shen, J. P., Gill, J.  
IEEE.2000: 372–372

- **Analysis on a hidden Markov channel model** *IEEE Global Communications Conference (GLOBECOM 99)*

Shen, J. P., Gill, J.  
IEEE.1999: 437–441

- **Smart photonic networks and computer security for image data** *Conference on Multimedia Networks - Security, Displays, Terminals, and Gateways*

Campello, J., GILL, J. T., Morf, M., Flynn, M. J.  
SPIE - INT SOC OPTICAL ENGINEERING.1998: 272–279

- **TERSE, SUPERTERSE, AND VERBOSE SETS** *INFORMATION AND COMPUTATION*

Beigel, R., Gasarch, W. I., Gill, J., OWINGS, J. C.  
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- **Terse, Superterse, and Verbose Sets** *Information and Computation*

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1993; 103: 68–85

- **Computation-Rate-Distortion in Transform Coders for Image Compression**

Gormish, M., J., Gill, J., T.  
1993

- **COUNTING CLASSES - THRESHOLDS, PARITY, MODS, AND FEWNESS** *7TH ANNUAL SYMP ON THEORETICAL ASPECTS OF COMPUTER SCIENCE ( STACS 90 )*

Beigel, R., Gill, J.  
ELSEVIER SCIENCE BV.1992: 3–23

- **Counting Classes: Thresholds, Parity, Mods, and Fewness** *Theoretical Computer Science, Special issue devoted to the 1990 STACS.*

Beigel, R., Gill, J., T.  
1992; 103: 3–23

- **Upper Bounds on Huffman Codeword Lengths**

Chu, K., C., Gill, J., T.  
1991

- **Codebook Compression for Alphabetic Codes**

Chu, K., C., Gill, J., T.  
1991

- **Mixed-Radix Huffman Codes**

Chu, K., C., Gill, J., T.  
1991

- **An Upper Bound on Huffman Codeword Lengths**

Chu, K., C., Gill, J., T.  
1991

- **COUNTING CLASSES - THRESHOLDS, PARITY, MODS, AND FEWNESS** *LECTURE NOTES IN COMPUTER SCIENCE*

- Beigel, R., Gill, J., Hertrampf, U.  
1990; 415: 49-57
- **Counting Classes: Thresholds, Parity, Mods, and Fewness**  
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1990
  - **Sorting  $n$  Objects with a  $k$ -Sorter** *IEEE Transactions on Computers*  
Beigel, R., Gill, J., T.  
1990; 39: 714–716
  - **Semi-Custom VLSI Systems**  
Gamal, A., El, Gill, J., T.  
1989
  - **On the Huffman Encoding of Infinite Source Alphabets**  
Cot, N., Gill, J., T.  
1982
  - **Hardware/Software Tradeoffs for Increased Performance**  
Hennessy, J., Jouppi, N., Baskett, F., Gross, T., Gill, J., T.  
1982
  - **The MIPS Machine**  
Hennessy, J., Jouppi, N., Gill, J., T., Baskett, F., Strong, A., Gross, T.  
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  - **NEWTONS METHOD AND RATIOS OF FIBONACCI NUMBERS** *FIBONACCI QUARTERLY*  
Gill, J., Miller, G.  
1981; 19 (1): 1-4
  - **Relative to a Random Oracle A,  $PA \neq NPA \neq co - NPA$  with Probability 1** *SIAM Journal on Computing*  
Bennett, C., Gill, J., T.  
1981; 10: 96–113
  - **MIPS: A VLSI Processor Architecture**  
Hennessy, J., Jouppi, N., Baskett, F., Gill, J., T.  
1981
  - **An Electronic Information System Usable by the Blind**  
Fowler, G., Linvill, J., Gill, J., T., Morf, M.  
1981
  - **Newton's Method and Ratios of Fibonacci Numbers** *The Fibonacci Quarterly*  
Gill, J., T., Miller, G.  
1981; 19: 1–4
  - **RELATIVE TO A RANDOM ORACLE-A,  $PA \text{ NOT-EQUAL } NPA \text{ NOT-EQUAL } CO-NPA$  WITH PROBABILITY-1** *SIAM JOURNAL ON COMPUTING*  
Bennett, C. H., Gill, J.  
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  - **Deterministic Simulation of Tape-Bounded Probabilistic Turing Machine Transducers** *Theoretical Computer Science*  
Gill, J., T., Hunt, J., Simon, J.  
1980; 12: 333–338
  - **Exact and Approximate Membership Testers**  
Carter, L., Floyd, R., Gill, J., T., Markowsky, G., Wegman, M.  
1978
  - **COMPUTATIONAL COMPLEXITY OF PROBABILISTIC TURING MACHINES** *SIAM JOURNAL ON COMPUTING*  
Gill, J.

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1977; 6 (4): 675-695

- **Computational Complexity of Probabilistic Turing Machines** *SIAM Journal on Computing*  
Gill, J., T.  
1977; 6: 675–695
- **Bounds on the Cost of Optimal Uniquely Decipherable Codes**  
Cot, N., Gill, J., T.  
1977
- **Polynomial Reducibilities and Upward Diagonalizations**  
Simon, I., Gill, J., T.  
1977
- **The Enumeration of Comparative Probability Relations** *The Annals of Probability*  
Fine, T., Gill, J., T.  
1976; 4: 667–673
- **Ink, Dirty-Tape Turing Machines, and Quasicomplexity Measures**  
Gill, J., T., Simon, I.  
1976
- **Ink, Dirty-Tape Turing Machines, and Quasicomplexity Measures** *Automata, Languages, and Programming*  
Gill, J., T., Simon, I.  
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Edinburgh University Press, Edinburgh. 1976: 285–306
- **Relativizations of the P =? NP Question** *SIAM Journal on Computing*  
Baker, T., Gill, J., T., Solovay, R.  
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- **SUBCREATIVE SETS AND S-REDUCIBILITY** *JOURNAL OF SYMBOLIC LOGIC*  
GILL, J. T., MORRIS, P. H.  
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- **On Subcreative Sets and S-Reducibility** *Journal of Symbolic Logic*  
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- **On Almost Everywhere Complex Recursive Functions** *Journal of the Association for Computing Machinery*  
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- **Conjectures on Uniquely Decipherable Codes** *IEEE Transactions on Information Theory*  
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- **A Joke about  $P = ?NP$**

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- **Speedups by Probabilistic Computation**

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- **Some Fruitful Areas for Research into Complexity Theory** *Computational Complexity*

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- **Some Fruitful Areas for Research into Complexity Theory**

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