

Stephen V. Rice, Ph.D.

P.O. Box 1390, Collierville, TN 38027 USA; (662) 202-6933
steve@stephenrice.com; www.stephenrice.com

Education

- Ph.D. in Computer Science, University of Nevada, Las Vegas (UNLV), 1996
- M.S. in Computer Science, University of Illinois at Urbana-Champaign, 1981
- B.S. in Mathematics, Western Michigan University, 1979

Experience

- Computer scientist, software engineer and architect, innovator, problem solver
- Object-oriented design, graphical user interfaces, multi-threading
- C, C++, Java, Python, Javascript, PHP, Windows, Unix/Linux, Android, XML, MSVS, Eclipse, SQL, ODBC, JDBC, ActiveMQ, TCP/IP, etc.

Work History

- Software development, since 1997: Comparisonics, CACI, TeamQuest
- Computer science professor, 2003-2010: University of Mississippi
- Software development, 1986-1996: UNLV, CACI
- Computer science instructor, 1984-1986: San Juan College in New Mexico
- Software development, 1981-1983: Oracle (40th employee), IBM

Innovations

- Database systems and search engines
 - [FindSounds.com](#) (2000), the leading web search engine for sound effects;
 - [FindSounds Palette](#) (2002), a state-of-the-art audio database system; and
 - [FindSounds for Android](#) (2011), the first mobile app for audio web search
 - custom in-memory database for FindSounds, for fast query processing
 - Simscript DataBase Connectivity (2002), patterned after ODBC, for accessing relational databases from Simscript programs using SQL
 - [Comparisonics colored waveform display](#) (1998), patented invention for visualizing audio recordings in audio retrieval and editing systems
 - TED (1983), the first-known table editor for relational databases
 - Oracle's first SQL pre-compiler (1982)

- Pattern recognition
 - research monograph entitled *Optical Character Recognition: An Illustrated Guide to the Frontier* (1999), which depicts sources of error in character recognition; this book influenced the development of CAPTCHAs
 - “sound-matching” algorithm (1997) for measuring the similarity of sounds, which is used in FindSounds for retrieving audio recordings based on sound similarity, and in machinery monitoring, with a clustering algorithm, to detect anomalous machine sounds
 - software toolset (1996) for measuring the accuracy of optical character recognition (OCR) systems using novel sequence-comparison algorithms; this software is used today by Google and other companies for OCR performance evaluation
 - UNLV Annual Test of OCR Accuracy (1992-1996), the first large-scale independent evaluations of commercial OCR systems
 - a “voting” OCR system (1991), which combined OCR classifiers by taking a majority vote to improve accuracy
- Programming languages and compilers
 - design and implementation of object-oriented features in the Simscript III programming language (2005), and a “braided” AVL tree data structure for fast discrete-event simulation
 - design and implementation of the Modsim object-oriented programming language for computer simulation (1988)

Mentoring

- Taught graduate and undergraduate computer science courses in programming (C++, Java, Python) and programming languages; algorithms and data structures; database systems; operating systems; compiler construction; computer audio; computer simulation; and pattern recognition
- Supervised research projects in academia and software development projects in industry

For more information, please see www.stephenrice.com.

Selected Publications

- Books:
 - S. V. Rice, G. Nagy, and T. A. Nartker, *Optical Character Recognition: An Illustrated Guide to the Frontier*, Kluwer Academic Publishers, Norwell, MA, 1999 ([link](#))
 - R. Belanger, B. Donovan, K. Morse, S. Rice, and D. Rockower, *Modsim: A Language for Object-Oriented Simulation*, CACI Products Company, La Jolla, CA, 1989
- Patent:
 - S. V. Rice and M. D. Patten, *Waveform Display Utilizing Frequency-Based Coloring and Navigation*, U.S. patent no. 6,184,898, Patent and Trademark Office, Washington DC, 2001 ([link](#))
- Journal articles:
 - S. V. Rice, H. Bunke, and T. A. Nartker, "Classes of Cost Functions for String Edit Distance," *Algorithmica*, 18(2), 1997
 - J. Kanai, S. V. Rice, T. A. Nartker, and G. Nagy, "Automated Evaluation of OCR Zoning," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 17(1), 1995
 - S. V. Rice, J. Kanai, and T. A. Nartker, "An Algorithm for Matching OCR-Generated Text Strings," *International Journal of Pattern Recognition and Artificial Intelligence*, 8(5), 1994
- Conference papers:
 - S. V. Rice, "Braided AVL Trees for Efficient Event Sets and Ranked Sets in the Simscript III Simulation Programming Language," in *Proceedings of the International Conference on High Level Simulation Languages and Applications*, San Diego, CA, 2007 ([pdf](#))
 - S. V. Rice, A. Marjanski, H. M. Markowitz, and S. M. Bailey, "The Simscript III Programming Language for Modular Object-Oriented Simulation," in *Proceedings of the 2005 Winter Simulation Conference*, Orlando, FL, 2005 ([pdf](#))
 - S. V. Rice, "Frequency-Based Coloring of the Waveform Display to Facilitate Audio Editing and Retrieval," in *Proceedings of the 119th Convention of the Audio Engineering Society*, Paper #6530, New York, 2005 ([pdf](#))
 - S. V. Rice and S. M. Bailey, "A Web Search Engine for Sound Effects," in *Proceedings of the 119th Convention of the Audio Engineering Society*, Paper #6622, New York, 2005 ([pdf](#))
 - S. V. Rice, F. R. Jenkins, and T. A. Nartker, "The Fifth Annual Test of OCR Accuracy," presented at the Fifth Annual Symposium on Document Analysis and Information Retrieval, Las Vegas, NV, 1996 ([pdf](#))