

John N. Rachlin, Ph.D.

Holliston, MA 01746

(617) 921-9669

john@rachlinresearch.com

EXPERIENCE

Project Leader, Consultant

2004 to Present

Sanofi Aventis, Scientific Computing Group

Cambridge, MA

Team leader overseeing development of web-enabled tools for genomic data integration and biological pathway analysis. Daily responsibilities include requirements gathering, project planning, issues management, software architecture, system design and implementation.

Research Assistant

2002 to 2006

Boston University, Dept. of Computer Science

Boston, MA

Ph.D. Thesis: *Multi-node graphs and their application to bioinformatics*. Describes a novel graph-theoretic framework wherein edges are activated or deactivated as a function of the state of their incident vertices. The model is shown to have application in the analysis of protein-protein interaction networks as well as in understanding the scalability and limits of multiplexed biological assays.

Developer of muPlex: a web-enabled multi-objective decision-support system for designing multiplex PCR experiments. The technology employs a multi-objective evolutionary computing approach to assay design optimization, and is actively used by dozens of academic, industrial, and government research labs worldwide.

Founder and President

1998 to 2003

optAmaze, Inc.

Holliston, MA

Deployed a novel web-based subscription service for production scheduling and distribution planning in process manufacturing facilities. Led business development activities at trade shows, customer facilities, and technology conferences. Closed a \$300K deal with Stora Enso North America, one of the world's largest paper producers. Responsible for project management, requirements gathering, system design, software development, and system deployment.

Bioinformatics Group Leader

2000

Genometrix

The Woodlands, TX

Lead developer of a suite of assay design automation tools for gene expression and genotyping microarrays. Worked closely with laboratory scientists to define software requirements and in the implementation and testing of multi-stage prototypes.

Software Engineer

1994 to 1998

IBM T.J. Watson Research Center

Yorktown Heights, NY

Developed Multi-agent decision-support architectures for applications in supply-chain optimization. Awarded 1998 INFORMS Wagner Prize (1st place) for excellence in operations research, IBM Research Division Award (Sep 1995), IBM Technical Group Award (Dec 1996). Co-author of three U.S. patents (assigned to IBM).

EDUCATION

Boston University, Boston MA

Ph.D. Computer Science, Jan 2007

Johns Hopkins University, Baltimore MD

M.S. Computer Science, 1995

Cornell University, Ithaca NY

B.A. English and Physics, 1988

TECHNICAL SKILLS

Bioinformatics: biological database development and design, analysis of biological networks, multiplex PCR primer design for genotyping and gene expression assays, forensic assay design.

Artificial Intelligence: evolutionary computing, machine learning, multi-agent systems, intelligent decision-support, planning & scheduling.

Software Development: 12+ years of object-oriented programming experience for commercial, industrial, and research applications. Java/J2EE, Servlets, JDBC, RMI, JDom, XML, Oracle, MySQL, Eclipse, Tomcat, C/C++, Perl/CGI/DBI, R, Unix/Linux.

RESEARCH

Alon N., Asodi V., Cantor C., Kasif K., and **Rachlin J.**; 2006. *Multi-node graphs: A framework for multiplexed biological assays.* Journal of Computational Biology **13**(10):1659-1672.

Rachlin J., Cohen D., Cantor C., and Kasif S.; 2006. *Biological Context Networks: a mosaic view of the interactome.* Molecular Systems Biology (Nature/EMBO) **2**:66 Epub 2006 Nov 28.

Rachlin J., Ding C., Cantor C., and Kasif S.; 2005. *Computational tradeoffs in multiplex PCR assay design for SNP genotyping.* BMC Genomics **6**(1):102

Rachlin J., Ding C., Cantor C., and Kasif S.; 2005. *MuPlex: multi-objective multiplex PCR assay design.* Nucleic Acids Res. **33**(Web Server Issue):W544-7.

Rachlin J., Goodwin R., Murthy S., Akkiraju R., Wu F., Kumaran S., and Das R.; 1999. *A-Teams: An Agent Architecture for Optimization and Decision-Support.* In Lecture Notes in Artificial Intelligence: Intelligent Agents V, J. Müller, M. Singh and A. Rao eds. Vol. 1555 (Springer-Verlag).

Murthy S., Akkiraju R., Goodwin R., Keskinocak P., **Rachlin J.**, Wu F., Yeh J., Fuhrer R., Kumaran S., Aggarwal A., Sturzenbecker M., Jayaraman R., Daigle R.; 1999. *Cooperative multiobjective decision support for the paper industry.* INTERFACES **29**(5):5-30.

Kasif S., Salzberg S., Waltz D., **Rachlin J.**, Aha D.W., 1998. *A Probabilistic Framework for Memory-Based Reasoning.* Artificial Intelligence **104**(1-2):287-311.

Goodwin R., Murthy S., **Rachlin J.**, Akkiraju R.; 1998. *Interactive Decision Support: Advantages of an Incomplete Utility Model.* AAI-Symposium on Decision-Theoretic Systems. San Francisco, CA.

Murthy S., **Rachlin J.**, Akkiraju R., Wu F.; 1997. *Agent-Based Cooperative Scheduling,* AAI-97 Workshop on Constraints and Agents.

Rachlin J., Kasif S., Salzberg S., and Aha D.W.; 1994. *Towards a Better Understanding of Memory-Based Reasoning Systems.* Machine Learning: Proceedings of the 11th International Conference, Morgan Kaufmann, San Francisco.