

Yael Maguire

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Thingmagic, Inc.
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Education

Massachusetts Institute of Technology, Media Laboratory; Cambridge — 1997-2004

PhD in Media Arts and Sciences, Fall 2004. Thesis: *Microslots: Scalable Electromagnetic Instrumentation*. Advisor: Neil Gershenfeld.

S.M. in Media Arts and Sciences, Fall 1999. Thesis: *Towards a Table Top Quantum Computer*. Advisor: Neil Gershenfeld.

Course work includes (GPA 5.0/5.0): Group Theory for Physicists, Silicon Biology, Statistical Mechanics, Spatial Aspects of NMR, Magnetic Materials, The Physics of Information Technology, and The Nature of Mathematical Modeling.

Queen's University; Kingston, ON, Canada — 1993-1997

B. Sc. in Engineering Physics, a double major in theoretical and applied physics with electrical engineering. Graduated with highest honors from the department.

Final thesis: *Rapid Single Flux Quantum Logic: Using Josephson-Junction Technology to Design Digital Circuits Operating at Sub-Terahertz Clock Frequencies*, supervised by John P. Harrison.

Employment

Thingmagic, Inc (<http://www.thingmagic.com>); Cambridge, MA — 09/04-

Founder, CTO and software architect of the Thingmagic's high performance and market leading software-defined radio RFID readers. Leader, technical strategy. Leader, development activities surrounding low cost computing.

Massachusetts Institute of Technology, Media Laboratory; Cambridge — 1997-2004

Research and Teaching Assistant for Professor Neil Gershenfeld. Activities include creating new instrumentation, techniques and algorithms for NMR and quantum computing to improve sensitivity.

Thingmagic, LLC (<http://www.thingmagic.com>); Cambridge, MA — 07/2001-08/2001

Founder. Worked on software and hardware for an embedded Linux computer and novel RFID tag reader. Early business work, management decisions, design and process for the company.

IBM Corporation Almaden Research Center; San Jose, CA — 01/1999

Staff researcher. Quantum Computing Research Group with Dr. Isaac Chuang. Worked on RF and digital electronic interfaces for a commercial NMR spectrometer, software development for quantum computing and UHV chamber construction.

Applanix Corp. (<http://www.applanix.com>); Richmond Hill, ON, Canada — Summer, 1996

Junior Engineer. Helped develop software interface to and mechanical assembly of an aided inertial guidance system.

Applied Magnetics Group, Queen's University; Kingston, ON, Canada — Summer, 1995.

Researcher. Applied Magnetics Group with Professor David Atherton. Did finite element analysis of magnetics for robotic devices that measure the stability of pipeline steel for the oil industry.

Honors and Awards

World Economic Forum, Technology Pioneer (ThingMagic) — 2007-2008.

Technology Review, Top 35 Under 35 Innovator — Published September, 2005.

CBA Fellowship (a tuition scholarship), MIT Media Lab — 09/2002-05/2003.

First MIT-Lemelson International Design Award for Passive Incubator for Premature Infants — 2002-2003.

National Science and Engineering Research Council (NSERC) of Canada PGS B award. Approximately 50 awarded worldwide yearly for outstanding graduate students — 2000-2002.

IBM Fellowship (MIT Media Lab). A tuition scholarship — 09/1999-05/2000.

Engineering Physics Design Award (Queen's University). For best engineering thesis — 05/1997.

Canadian Association of Physicists Undergraduate Exam Prize, 10th place nationally — 1997.

Publications

Yael Maguire, Isaac L. Chuang, Shuguang Zhang and Neil Gershenfeld. *Ultra-small-sample molecular structure detection using microslot waveguide nuclear spin resonance*. PNAS. vol. 104, no. 22, 2007.

Yael Maguire and Ravikanth Pappu. *An Optimal Q-algorithm for ISO 18000-6C UHF RFID*. In Press, 2007.

Benjamin Recht, Yael Maguire, Seth Lloyd, I.L. Chuang and Neil Gershenfeld. *Using unitary operations to preserve quantum states in the presence of relaxation*. ArXiv.org:quant-ph/0210078.

Nitin Sawhney, Saul Griffith, Yael Maguire and Timothy Prestero. *Thinkcycle: Sharing Distributed Design Knowledge for Open Collaborative Design*. *International Journal of Technologies for the Advancement of Knowledge and Learning*. TechKnowLogia. Jan 2002, Vol. 4 Issue 1. pp. 49-53.

Yael Maguire. *Des gouttes d'ordinateur*. La Recherche. Vol. 347, November, 2001. pp. 33-36.

Yael Maguire, Edward Boyden, Neil Gershenfeld. *Towards a Table-Top Quantum Computer*. *IBM Systems Journal*. vol 39, no. 3&4, 2000.

O. Omojola, E.R. Post, M.D. Hancher, Y. Maguire, R. Pappu, B. Schoner, R. Fletcher, N. Gershenfeld. *An installation of interactive furniture*. *IBM Systems Journal*. vol 39, no. 3&4, 2000.

Yael Maguire. *Towards a Table-Top Quantum Computer*. Master's Thesis. MIT Media Laboratory, 1999. <http://www.media.mit.edu/~yael/99.09.yael.pdf>

Starner T, Maguire Y. *Heat dissipation in wearable computers aided by thermal coupling with the user*. *Mobile Networks & Applications*. vol.4, no.1, 1999, pp.3-13.

Starner T, Maguire Y. *A heat dissipation tutorial for wearable computers*. Digest of Papers. IEEE Second International Symposium on Wearable Computers (Cat. No.98EX215). IEEE Comput. Soc. 1998, pp.140-8. Los Alamitos, CA, USA.

Richard J. Nelson, Yael Maguire, Daniel F. Caputo, Gabriela Leu, Yun Kang, Marco Pravia, David Tuch, Yaakov S. Weinstein, David G. Cory. *Counting echoes: Application of a complete reciprocal-space description of NMR spin dynamics*. Concepts in Magnetic Resonance. vol 10, issue 6, 1998. pp. 331-341.

Presentations

Ultra-small-sample molecular structure detection using microslot waveguide nuclear spin resonance. VII European Symposium of The Protein Society. May 12-16, 2007, Stockholm, Sweden.

Kevin Ashton and Yael Maguire. *RFID Next*. RFID World 2007. Mar. 26-28. Dallas, Tx.

John Greaves, Sanjay Sarma and Yael Maguire. *The Future of RFID*. Technology Review Webcast, Mar. 20 2007, Cambridge, MA.

Visions and Trends in US Markets - A Start-up perspective. ITU RFID Workshop, Geneva, Switzerland. Feb. 13-14, 2006.

Slitted Microstrip Fabrication Using Laser Micromachining for Small Sample Detection. Poster Presentation at 45th ENC NMR Conference 2004 in Asilomar, CA.

Small Probes for Spin Detection. Presentation at the 2003 MIT-HP Quantum Computing Workshop, Corvallis, Oregon. Aug 12, 2003.

Digital NMR. Presentation at the 2002 MIT-HP Quantum Computing Workshop, Palo Alto, California. July 10, 2002.

Bulk Spin Resonance Quantum Information Processing. Invited Speaker at the National High Magnetic Field Laboratory. Tallahassee, FL. Jan 19, 2001.

Bulk Spin Resonance Quantum Information Processing. Invited Speaker at Florida State University Colloquium. Tallahassee, FL. Jan 18, 2001.

Table-Top Quantum Information Processing. Speaker at Cambridge-MIT Initiative Workshop on QIC. Cambridge, MA. Nov. 27, 2000.

Bulk Spin Resonance Quantum Information Processing. Plenary talk at ACAT 2000. Fermi National Accelerator Laboratory. Oct. 17, 2000.

Bulk Spin Resonance Quantum Information Processing. Sole invited student speaker at the NSF

Workshop on Quantum Information Science. Arlington, VA. Oct 28, 1999.

Towards a Table-Top Quantum Computer. Poster presentation at the 1999 Gordon Research Conference on Magnetic Resonance, New England College. Henniker, NH. Jun 30, 1999.

Towards a Table-Top Quantum Computer. Invited student speaker at The Conference on High Speed Computing, Salishan Lodge. Gleneden Beach, Oregon. Apr 22, 1999.

Towards a Table-Top Quantum Computer. Invited student speaker at The Mini-Workshop on Physical Realizations of Quantum Information Processors. Berkeley, CA. Jan 23, 1999. Feb, 1998.

Teaching Experience

How to Make Something That Makes (almost) Anything. Co-taught with Neil Gershenfeld, Joe Jacobson and Benjamin Vigoda. MIT. Spring, 2007.

The Nature of Mathematical Modeling. Co-taught with Neil Gershenfeld, Benjamin Recht, and Benjamin Vigoda. MIT. Spring, 2006.

Design That Matters. Co-taught with Tim Prestero, Nitin Sahwney and Mitchel Resnick. Engineering solutions to challenges in developing countries. MIT. Spring, 2003.

Design That Matters. co-taught with Nitin Sahwney, Saul Griffith, Benjamin Vigoda and Mitchel Resnick. Engineering solutions to challenges in developing countries. MIT. Spring, 2002.

Skills

Digital, analog and RF design and construction, microcontroller/FPGA programming, PC board prototyping. Mechanical fabrication and simulation including NC machining, lathing, milling, water jet cutting, general machine shop use and Ideas, Ansys. Trained in silicon wafer processing. Experience with Verilog, assembly, C/C++, Java, Matlab, Mathematica, OpenGL, X-windows, Javascript, HTML, PHP, Python and Visual Basic. Routine use of Mac OS X, Linux, Windows and Solaris. Extensive knowledge of mathematical modeling, signal processing and numerical methods. Familiar with Spanish and French.

Patents

Yael Maguire, Matthew Reynolds, Ravikanth Pappu. *Multi-reader coordination in RFID system*. US Patent Application. Filed July 1, 2005.

Yael Maguire, Neil Gershenfeld and Isaac Chuang. Slitted and stubbed microstrips for high sensitivity, near-field electromagnetic detection of small samples and fields. US Patent Application. Filed Aug. 27, 2004.

Matthew Reynolds, Joseph Richards, Sumukh Pathare, E. Rehmatulla Post, Yael Maguire, Harry Tsai, Ravikanth Pappu, Bernd Schoner. *Methods and apparatus for operating a radio device*. Patent Number 7075412. Issued Jul. 11, 2006, filed May 29, 2003.