SAMUEL A. INVERSO

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Citizenship: USA

EDUCATION

The Australian National University, Canberra, ACT, AU
Doctor of Philosophy in *Neuroscience,* submitted July 2010
Dissertation: *Evoked Currents in Human Visual Cortex*

Rochester Institute of Technology, Rochester, NY, USA
Master of Science in *Computer Science*, November 2004
GPA 4.0/4.0
Thesis: *Automatic Error Recovery Using P3 Response Verification for a Brain Computer Interface*

Rochester Institute of Technology, Rochester, NY, USA
Bachelor of Science in *Computer Science*, February 2001
Cumulative GPA 3.36/4.0; Professional GPA 3.3/4.0; Dean's List
Minor: Psychology. Concentrations: Artificial Intelligence and General Business Administration.

PUBLICATIONS

- Inverso S. A., Goh X. L, James A. J., Slowing Vision: Pattern Pulse MultiFocal Visual Evoked Potential (PPmfVEP) timing dilation under Isoluminant and Luminance Contrast Conditions (poster) Presented at Vision Science Society 2009, Naples, Florida, USA, May 8-13, 2009.
- Inverso S. A., Doolan B., James A. J., Real-time Influence of Interocular Transfer During Binocular Rivalry (poster) Presented at Vision Down Under 2007, Palm Cove, QLD, Australia, July 19-22, 2007.
- Costanza E., Inverso S. A., Pavlov E., Allen R., Maes P. "eye-q: Eyeglass Peripheral Display for Subtle Intimate Notifications." (full paper) to appear in *Proc. of MobileHCI 2006*, September 2006, Espoo, Finland.
- Bayliss, J. D. and Inverso, S. A. "Automatic Error Correction Using P3 Response Verification for a Brain-Computer Interface." (full paper) *Proc. 11th International Conference on Human-Computer Interaction* July 22-27, 2005, Las Vegas, NV. Mahwah: Lawrence Relbaum Associates. 2005.
- Costanza, E., Inverso, S. A., and Allen, R. "Toward Subtle Intimate Interfaces for Mobile Devices Using an EMG Controller." (full paper) *Proc. of CHI2005: Conference on Human Factors in Computing Systems* Portland, Oregon, USA. 2005.
- Bayliss, J. D., Inverso, S. A., and Tentler, A. "Changing the P300 Brain-Computer Interface." *Journal of CyberPsychology & Behavior* 7.6:694-704, 2004.
- Inverso, S. A., Hawes, N., Kelleher, J., Allen, R., and Haase, K. "Think and Spell: Context-Sensitive Predictive Text for an Ambiguous Keyboard Brain-Computer Interface Speller." *Biomedizinische Technik* 49 Suppl. 1: 53-54, 2004.
- Costanza, E., Perdomo, A., Inverso, S. A., and Allen, R. "EMG as a Subtle Input Interface for Mobile Computing." *6th International Symposium MobileHCI 2004.* Ed. Brewster S., Dunlop M. Glasgow, UK: Springer. 426-430, 2004.
- Anderson, P. G., Arney, J. S., Inverso, S. A., Kunkle, D. R., Lebo T., and Merrigan , C. **"**A Genetic Algorithm Search for Improved Halftone Mask*" ANNIE Conference*, Nov. 2003, St. Louis, MO.

PROFESSIONAL EXPERIENCE

Massachusetts Institute of Technology Media Lab Europe, Dublin, Ireland 9/2003 to 1/2005
Research Associate

- Designed a brain-computer interface (BCI) spelling application to reduce the user selections required to "type" messages. A context-sensitive text prediction algorithm, developed by Hawes and Kelleher at the MLE, and an ambiguous keyboard were utilized (see publications Inverso 2004).
- Investigated electromyogram (EMG: electrical activity from a muscle contraction) as a subtle socially acceptable interface for mobile devices. Designed and performed experiments and user trials to validate this interface (see publications Costanza 2004 and 2005). Participated in many Open House sessions, where demonstrations of the research projects where presented to lab sponsors and the general public.

Rochester Institute of Technology, Rochester, NY 9/2001 to 8/2003
Research Assistant
- Developed and experimented with a method to generate halftone masks using genetic algorithms in MATLAB with Peter Anderson, PhD. and Jon Arney, PhD (see publications Anderson October 2003 and November 2003).

Teaching Assistant
- Instructed Computer Science 1, 2, 3, and Accelerated Computer Science 1 laboratory courses, which teach students engineering problem solving and object-oriented programming using Java.
- Coordinated and taught weekly student help sessions.

Kaloke Technologies, Inc., Chadds Ford, PA 3/2001 to 8/2001
Software Engineer
- Designed and implemented a notification subsystem which dynamically generated and sent emails to customers and administrators. JMS messages sent to the subsystem determined the XML email template to process. The templates contained tags associated with Java classes that pulled information from an Oracle database via JDBC then processed and rendered the data.
- Developed a Java DataLoader that loaded class member variables from files to facilitate large dataset testing.
- Wrote, tested, and debugged my and other's Java code which accessed stored procedures in an Oracle Database.

Bristol-Myers Squibb, Co., Syracuse, NY 3/2000 to 8/2000
Co-op Software Developer
- Technical lead on a project to select an application server for enterprise wide deployment. Created criteria and implemented tests to determine the suitability of the application server candidates. Prepared and delivered recommendation document and presentation to supervisor.
- Investigated approaches to integrate COM/DCOM with Java, especially Enterprise JavaBeans (EJB).
- Developed a security component to authenticate users with an LDAP server using Stateful Session EJBs.

Kenneth Crosby, Inc., Rochester, NY 8/1999 to 12/1999
MIS Assistant
- Constructed MS-Access database to manage and track all hardware and software assets.
- Analyzed Year 2000 compliance then created and implemented a Year 2000 compliance plan.

FirstUSA Bank, Wilmington, DE 6/1998 to 2/1999
Co-op Research and Development
- Participated in a code review of a mission critical application created for FirstUSA by an out of house consulting firm. Identified design and coding issues, and introduced optimizations into the application.
- Designed and prototyped a distributed application for marketing personnel to easily manipulate web page content using business rules. The application was implemented with Java, Java Servlets, Swing, and XML.
- Developed an approach to integrate Common Gateway Interface (CGI) programs with CORBA clients using Java Servlets and C++.
- Created an application allowing non-technical personnel to alter the content and presentation of web pages using templates. Templates were created with Dream Weaver; JHTML, Java Servlets, and JDBC were used to render the web pages.
- Created a Java realm, for BEA WebLogic, to authenticate users against an LDAP server.
- Presented and demonstrated proof-of-concepts to varying levels of management.
- Interviewed several interns and trained two that were hired.

COMPUTER EXPERIENCE

Languages:	C++, C, MATLAB, Java, Python, Perl, XML, HTML, SQL
Specifications:	Enterprise JavaBeans, JSP, Java Servlets, JDBC, JMS, SAX, DOM, LDAP, CORBA
Operating Systems:	Windows Vista/XP/2000/NT/9x, Unix, Linux, Mac OS X, DOS
Software:	Psychophysics Toolbox, BCI2000, Cogent, Neurobehavioral Systems Presentation, FreeSurfer, MNE Toolbox
Equipment:	BIOSEMI, g.tec g.BSamp, Tucker-Davis Technologies, Polhemus 3Space FASTRAK, Cambridge Systems OptiCAL

PROJECTS

- *Software Engineering:* Lead a five student team in an eight-week software development project where we designed, programmed, and tested a graphical money management system in C++ and XForms on Solaris.
- *Computer Vision:* Programmed an ellipse detection algorithm using the Randomized Hough Transform in MATLAB. Developed a variety of edge density and Hough Transform methods to extract barcodes from distorted images.
- *Neural Networks:* Trained and experimented with binary and bipolar back-propagation neural networks to detect faces in a variety of scenes. Implemented a back-propagation neural network in Java.
- *Algorithms:* Implemented Dijkstra all-pairs shortest path algorithm in C++ using a minimum binary heap for the min priority queue. Compared its running time against teammate's implementation of Matrix Multiplication and Floyd Warshall in a variety of experiments.
- *Computer Architecture:* Implemented the DLX instruction set and M. Morris Mano's microprogrammed machine using the C++ Arch library.
- *Genetic Algorithms:* Programmed and experimented with a variety of GAs in C and MATLAB, including a permutation solution to the N-SuperQueens problems and solutions to density classification, synchronization, and surface minimization of two dimensional cellular automata.
- *Distributed Artificial Intelligence:* Implemented, in Java, the Clark Tax algorithm to solve the Multiple Traveling Salesperson problem, the filtering algorithm to solve the Graph Coloring problem, Q-learning for a multi-agent foraging task, and a SARSA-lambda agent for a multi-agent RoboCode tournament.

SCHOLARSHIPS AND GRANTS

National Computational Infrastructure Supercomputer Grant	$8,000 ANU, 2010
ARC Centre of Excellence PhD Stipend Scholarship	ANU, 2009-2010
Vice Chancellor's Travel Grant	$1,500, VSS, ANU, 2009
Endeavour International Postgraduate Research Scholarship	PhD, ANU, 2006—2010
ARC Centre for Excellence RSBS Top-Up Scholarship	PhD, ANU, 2006—2009
Australian National University PhD Stipend Scholarship	PhD, ANU, 2006—2009
Summer Research Scholarship in the Research School of Biological Sciences (RSBS)	ANU, 2005—2006
Computer Science Graduate Scholarship	MS, RIT, 2001—2003
Undergraduate Tuition Grants for Academic Excellence	BS, RIT, 1998—2000

AWARDS

2010 Burgmann College Medal (Academics, Leadership, and Service)

MEMBERSHIPS

Vision Sciences Society, since 2008
IEEE, since 2002
Association for Computing Machinery, since 1998

OTHER EXPERIENCE

Burgmann College, Canberra, Australia 2/2006 to 1/2010
Dean of Postgraduates, 7/2008 to 1/2010, *Senior Fellow,* from 3/2007, *Fellow,* from 2/2006

- Head of academic and pastoral care for 120 residents. Managed five Fellows and event funds. Organized College wide events. Served on the Finance Subcommittee, Audit and Risk Subcommittee, and Board of Management. Weekly on call emergency contact, including fire alarm panel operation and coordination with Ambulance, Fire, and Police Emergency Services.

REFERENCES

Available upon request.