

Jean Rintoul

985 Howard St, San Francisco, CA, 94103 Cell: 415 269 2692 jean.rintoul@gmail.com

Quantitative analytic solutions. Intelligent Algorithms. Efficient innovation.

Technical Skills Research innovation at production quality. Real-time EEG experimental design and data analysis, software creation. I can integrate a broad spectrum of solutions from hardware to software resulting in solutions that work. I enjoy creating collaborative partnerships with people in specialist fields and can put knowledge together to optimize strategic approaches.

Technical skills include the following:

- Algorithm development
- Experimental design and set up, creating and testing data acquisition systems.
- Matlab, Labview, C++
- SVN, UML, PHP5, Perl, SQL, HTML, CSS

Career Summary ***Gazzaley Lab, UCSF (January 2009 to current date) – Research Specialist***
Created an EEG pattern recognition tool, integrating WEKA (Java based pattern recognition tool) and Matlab for analysis of EEG data. Algorithms include: decision trees, time series classification, topographic NN weights, logistic regression, Bayes nets, neural networks.

Real-time Biosemi integration in Matlab in collaboration with Brainstream from Donders Institute. Allows combination of brain training game and neurofeedback to determine best way to effect learning. Real-time Matlab Neurosky Mindwave implementation, collaborating with software developers from Neurosky.

Development of brain training game Neuroracer (C++) in collaboration with Lucas Arts and Apple. Shown at Games for Health Conference, it's now used in every new study in the lab, and is the foundation technology of a new company in Boston.

Subject database (SQL with PHP front end), allowing more efficient searching of subject's status, eligibility and individual characteristics for everyone in the lab. Lab system administrator: website, survey software and server set up, administration and specifications design.

Emotiv (June 2006 to December 2008) – Research Engineer – Sydney->San Francisco
Research Engineer at Emotiv, working on a novel human/machine interface based on a consumer optimized EEG headset: www.emotiv.com

Implemented advanced DSP techniques over 16 Channel EEG System to isolate muscle movement from noise: Digital Filter Design, Adaptive Filtering – Kalman, LMS and Weiner, PCA, ICA, Neural Networks and Gaussian Mixture Models, linear and non-linear Support Vector Machines. Spectral power and variance, Wavelet Analysis, Auto-Regressive feature models.

Developed universal classifiers and machine learning algorithms to run on a real-time system. Optimizing feature sets for training real-time classification systems.

Developed the Non Transient Expressiv Algorithm which is the core machine learning algorithm behind the Expressiv Suite, doubling the number of detectable expressions. This is a reliable and robust algorithm and is always demonstrated to clients.

Implemented quantitative analysis suite which integrates with both the SDK and Matlab infrastructure.

Collaborated with SDK team to create an SDK specifically designed for researchers' needs. Ported Matlab algorithms to C++.

Developed Labview user interface interfacing with the Emotiv SDK

Tenix (2005 – 2006)- Software Engineer – Sydney, Australia

The Land 19 Dome simulator project. The virtual reality dome consisted of 27 projectors creating a 3D environment for the military to train to use missile launchers. Implemented the ASE (Army Synthetic Environment) interface that allowed external simulations to interact with the Land 19 Dome. This project won the Australian Engineering Excellence Awards 2006.

Implemented a Naval Frigate training simulator using the RAPID visual programming tool to create high fidelity working models of machines onboard. Site liaison in Naval Frigate machine rooms to gain accurate models of onboard systems.

Created new entities within the network warfare simulation JSAF (Joint Semi-Automated Forces). C++, outfitting entities for Australia's predicted future forces.

Liaised extensively with external clients to determine requirements and specifications.

Coding, version control, system design and requirements documentation to MILSPEC 498 regulation, unit testing and peer review.

DSTO-Defense Science and Technology Organization - EWRD – Electro-Optic Countermeasures Group (2003-2005) – Research Engineer – Adelaide, Australia

Simulation of Electro-Optic Countermeasures through a Matlab and C++ implemented model of aircraft and missile dynamics and PID control systems.

Aircraft field trials and hardware testing to verify simulation. Working within a large team of Research Engineers on site at Evan's Head Bombing Range.

Designed and implemented a hardware simulation results tool using Java Servlets with a MySQL database back end. Configuring Apache, Tomcat, MySQL.

Education

B.Eng (Mechatronic Engineering) (Hons) and B.Sc (Advanced) Majoring in Physics completed at the University of Sydney. Winner of the BAE undergraduate thesis presentation prize.

My undergraduate thesis explored creating covert passive imaging sensors based on the existing GPS satellite network. This involved both hardware and open source GPS software modification. GPS signal processing software was written in C++ and simulation of the reflected multi-path signals in Matlab. Innovative use of pre-existing hardware which had not been previously explored.

Recommendations

"Jean's contributions have had a very positive impact on a highly visible set of features in Emotiv's software product. She is a well-organized, creative problem solver, with an impressive set of mathematical and engineering skills. I would be delighted to work with her again!"

Julian Wixson, Software Engineer (SDK Team Lead), Emotiv Systems
worked with Jean at Emotiv

"Jean is an absolute gem to work with. She's hard working, reliable, and very conscientious about her work ethic. A brilliant and creative research engineer, Jean was one of the original developers for our Expressiv Suite, and has been critical in building it into to the phenomenal detection asset it has currently become."

Lori Washbon, Creative Director, Emotiv Systems Inc.
worked with Jean at Emotiv

Activities and Achievements/Other

Please see <http://www.jeanrintoul.com> to see many of the other projects I have worked on as well as my googlecode profile. I'm an active engineer, when I'm not thinking, I'm doing, and I have a large list of hobby projects which enhance my technical abilities. I love creative problem solving with other people who love it too. I have lead as well as worked on others projects.

Certificate in Audio Engineering(SAE). Interactive Art: False Profit Labs – Better Art through Science. Active member of Quantified Self organization encouraging biometric tracking, biofeedback, and neuro feedback for self-enhancement.