**John LaRocco**

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EDUCATION:

*University of Texas San Antonio*, San Antonio, Texas, Postdoctoral Research, 2015-Present,

Department: Computer Science

*University of Canterbury*, Christchurch, NZ, PhD, 2012-2015,

Major: Electrical and Computer Engineering

*Rowan University,* Glassboro, NJ, USA, MS, 2008-2010,

Major: Electrical and Computer Engineering

*The College of New Jersey*, Ewing, NJ, USA, BS, 2004-2008

Major: Biomedical Engineering

ACCREDITATION/AWARDS:

-IEEE Member (2015)

-Van der Veer Institute Doctoral Scholarship (2012)

-AEL Graduate Honors Society Member (2009-2010)

-Passed EIT Exam (Spring 2008)

SKILLS:

*Software*: MATLAB, C++, Java, HTML, Arduino, PRO/E, AutoCAD, Solidworks, Mathematica, PSPICE, ANSYS, LabVIEW, EEGLAB, BCI2000

*Trade*: Writing, CAD/CAM

*Writing:* Technical, Fiction

RESEARCH EXPERIENCE:

*Automated Annotation of EEG, U. of Texas San Antonio, San Antonio, Texas, USA,* December 2015-Present

Investigated methods to automatically detect nonstationary spectral features in EEG.

*Detection of Microsleeps from the EEG via Optimized Classification Techniques, U. of Canterbury, Christchurch, NZ,* May 2012-October 2015

Implemented a modular software toolset, including a range of feature reduction and classifier structures, for EEG-based detection of microsleep events.

*Implementation of a Simulated Artificial Circulatory System for Isolated Brain Sustenance on Arduino, U. of Canterbury, Christchurch, NZ,* 2015

Proposed a control framework for an isolated brain life support system with negative feedback, and implemented an Arduino-based model.

*Design of a Digital Currency for Basic Income, U. of Canterbury, Christchurch, NZ,* 2014

Proposed a digital complementary currency pegged to New Zealand dollar for universal basic income, and oversaw deployment of software prototype.

*Simulated Testing of a 3D Printed Revolver Cylinder, U. of Canterbury, Christchurch, NZ,* 2013

Designed a computer model of a 3D printed double-action revolver for forensic investigation, and simulated frame deformations resulting from cartridge firing.

*Device Research, U. of Delaware, Newark,* DE, Fall 2010/Autumn 2011

Designed and fabricated spintronics devices for sensing bioparticles.

*Effects of Mental Training on BCI Performance With Distraction, Rowan U., Glassboro*, NJ, 2010

Compared performances of experimental (meditation) and control (non-meditation) groups on cognitive tests and EEG driven BCI.

*Fight Simulator, TCNJ,* Ewing, NJ, Fall 2007/Spring 2008

Built an apparatus to model impacts from fighting-based sports.

*Biosignal Virtual Interface, TCNJ,* Ewing, NJ, Spring 2008

Designed a virtual machine driven by two independent EMG biosignals.

*Introduction to Biomaterials, TCNJ*, Ewing, NJ, Autumn 2007

Modeled a drug-eluting arterial stent.

*Biomechanics,* *TCNJ,* Ewing, NJ, Spring 2008

Designed a prosthetic hip implant for a broken femur.

*Thermodynamics I, TCNJ,* Ewing, NJ, Fall 2006

Modeled an “ideal firearm” in terms of chemical energy necessary for bullet mass and velocity.

SELECTED PUBLICATIONS:

**Optimal EEG feature selection from average distance between events and non-events**. John LaRocco, Richard D. Jones, Carrie R. H. Innes, Philip J. Bones, Steve Weddell. *Proceedings of the 36th International Annual IEEE Engineering in Biology and Society Conference (2014)*

**Simulated testing of a 3D printed revolver cylinder**. John LaRocco. *Peer Evaluation (2013).*

PUBLISHED ABSTRACTS:

LaRocco J, Innes C, Bones P, Weddell S, Jones R (Nov 2014). Optimal EEG feature selection from average distances between events and non-events. (Abstract) *Australasian Physical & Engineering Sciences in Medicine*, 38: 195-196. [Presented at New Zealand Physics and Engineering in Medicine Conference (NZPEM 2014), Christchurch, Nov 2014]

PATENTS:

**Life Support System for a Full Body Prosthetic**. Provisional patent application [709839] filed in New Zealand (2015).

WORK EXPERIENCE:

**Research Assistant,** *New Zealand Brain Research Institute ’12-’15*

Implemented at a MATLAB-based modular software toolbox for EEG-based microsleep detection.

**Note Taker,** *University of Canterbury Disability Resource Service ‘15*

Recorded and edited lecture notes for disabled and handicapped students.

**Teaching Assistant,** *University of Canterbury Electrical and Computer Eng. Department ‘15*

Provided support and instruction to undergraduate students during tutorial sessions for controls and instrumentation.

**Research Assistant,** *University of Delaware Electrical Eng. Department ’11-‘12*

Investigated the viability of spintronic devices as nanoparticle detectors by measurement of magnetic fields.

**Teaching Assistant,** *University of Delaware Electrical Eng. Department ’10-‘11*

Supervised undergraduate students in electronic circuits lab and graded reports, exams, and homework.

**Research Assistant***, Rowan University Electrical Eng. Department ’08-‘09*

Developed a battery of tests for exhibiting the effects of meditation training upon brain-computer interface with and without distraction.

**Math Tutor,** *Rowan University Math Department’08-’09*

Tutored undergraduate students in topics such as calculus, differential equations, and mathematical proofs.

**Biomedical Technician,** *Kennedy Health Systems’07-‘08*

Performed periodic maintenance and troubleshooting on medical equipment at three separate medical campuses on a regular schedule.

**Overnight Stock,** *Kohl’s Department Stores’05*

Prepared merchandise for sale during unconventional hours.

TALKS:

*The Kiwicoin Project,* Seminar, EPIC, Christchurch, NZ, Oct 2014.

*Technical Viability of Artificial Neurocirculatory Systems*, Seminar, NZBRI, Christchurch, NZ, Mar 2013.

*Theoretical Approaches to Connectome Research*, Seminar, NZBRI, Christchurch, NZ, Dec 2012.

*Automated Detection and Classification of Lapses*, Seminar, NZBRI, Christchurch, NZ, Aug 2012.

LEADERSHIP INVOLVEMENT:

**3D Printing Officer,** *UC Maker Society**’14-’15*

**Project Director,** *UC Maker Society ‘13-‘14*

**Postgraduate Representative,** *UC ECE ’13-‘15*

**Secretary,** *One World International Student Club '12-'13*

**Treasurer,** *UD Socratic Club '11-'12*

**Member,** *Biomedical Engineering Society (National) '07-'08*

**Webmaster** and **Founding Member,** *TCNJ Biomedical Engineering Society '05-'06*

**Newsletter Editor,** *Asian American Association '06-'07*

**Webmaster**, *Korean American Student Association '05-'06*

**Secretary**, *TCNJ Aikido Club '05-06, '06-'07*

**Vice President**, *TCNJ Aikido Club '07-'08*

VOLUNTEER EXPERIENCE:

**Adopt-a-Shelf Program,** *Margaret E. Hegan Public Library, ‘08*

PUBLISHED FICTION:

**Ergo Sum**, 2012

**Stone Against The Sea**, 2013

REFEREES:

International:

Professor Richard Jones, *University of Canterbury Electrical and Computer Engineering Department; New Zealand Brain Research Institute*.

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Professor Phil Bones, *University of Canterbury Electrical and Computer Engineering Department.*

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Email: phil.bones@canterbury.ac.nz

Dr. Steve Weddell, *University of Canterbury Electrical and Computer Engineering Department*.

Phone: (+64 3) 364 2987 ext 8072

Email: steve.weddell@canterbury.ac.nz

US:

Prof. Robi Polikar, *Rowan University*

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Prof. Ravi Ramachandran, *Rowan University*

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Email: ravi@rowan.edu

Dr. Manish Paliwal, *The College of New Jersey*.

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