

# JUAN QUIROZ

## Research Fellow

Australian Institute of Health Innovation

Macquarie University

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## PROFILE

- Research Fellow at the Centre for Health Informatics, Australian Institute of Health Innovation, Macquarie University.
  - Work experience across USA, Malaysia, and Australia with expertise in data science, machine learning, and evolutionary computation.
  - Five years of experience in intellectual property, patent preparation and prosecution.
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## EDUCATION

### **Ph.D. in Computer Science and Engineering, 2010**

University of Nevada, Reno

Thesis title: "Creative Design Using Collaborative Interactive Genetic Algorithms"

Area: Evolutionary Computation, Design Computing

### **M.S. in Computer Science, 2007**

University of Nevada, Reno

Thesis title: "Interactively Evolving User Interfaces"

Area: Evolutionary Computation, Human Computer Interaction, User Interface Design

### **B.S. in Mathematics and Computer Science, 2005**

University of Nevada, Reno

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## EMPLOYMENT

June 2018 – Present

### **Research Fellow**

Australian Institute of Health Innovation

Macquarie University (Sydney, Australia)

Feb 2018 – May 2018

### **Visiting Researcher**

Department of Computer Science and Engineering

University of Nevada, Reno

Sep 2017 – Dec 2017

### **Visiting Researcher**

Jan 2017 – Mar 2017

School of Engineering and Applied Sciences

Harvard University

Aug 2014 – Aug 2017	<b>Lecturer</b> Department of Computer Science and Information Systems Sunway University (Bandar Sunway, Malaysia)
Jan 2009 – Jun 2014	<b>Intellectual Property Specialist – Patent Agent</b> SilverSky Group LLC (Reno, Nevada, USA) Independent Contractor (Reno, Nevada, USA)
Jun 2007 - Aug 2007	<b>Summer Scholar</b> Joint Genome Institute Lawrence Livermore National Laboratory (Livermore, California, USA)
Aug 2005 - May 2009	<b>Graduate Research Assistant</b> University of Nevada, Reno Evolutionary Computing Systems Lab

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## PUBLICATION LIST

### Journal Articles

11. **J.C. Quiroz**, L. Laranjo, A.B. Kocaballi, S. Berkovsky, F. Rezazadegan, E. Coiera, "Challenges of Developing a Digital Scribe to Reduce Clinical Documentation Burden," *npj Digital Medicine*, 2019. [Altmetric 70]
10. A.B. Kocaballi, S. Berkovsky, **J.C. Quiroz**, L. Laranjo, H.L. Tong, F. Rezazadegan, A. Briatore, E. Coiera, "Personalization of Conversational Agents in Healthcare: A Systematic Review," *JMIR*, 2019.
9. A.B. Kocaballi, E. Coiera, H.L. Tong, S. White, **J.C. Quiroz**, F. Rezazadegan, S. Willcock, L. Laranjo, "A network model of activities in primary care consultations," *Journal of the American Medical Informatics Association*, 2019.
8. H.L. Tong, E. Coiera, W. Tong, Y. Wang, **J.C. Quiroz**, P. Martin, L. Laranjo, "Efficacy of a mobile social networking intervention in promoting physical activity: Quasi-experimental study," *JMIR Mhealth Uhealth*, 2019.
7. **J. C. Quiroz**, M.H. Yong, E. Geangu, "Emotion-Recognition Using Smart Watch Sensor Data: Mixed-Design Study," *JMIR Mental Health*, 2018.
6. **J. C. Quiroz**, N. Mariun, M. A. M. Radzi, N. Mison, "Fault Detection of Broken Rotor Bar in LS-PMSM Using Random Forests," *Measurement*, 2018.
5. **J. C. Quiroz**, A. Banerjee, S. M. Dascalu, S. L. Lau, "Feature Selection for Activity Recognition from Smartphone Accelerometer Data," *Intelligent Automation and Soft Computing*, 2017.
4. **J. C. Quiroz**, S. M. Dascalu, "Interactive Shape Perturbation," *International Journal of Computers and Their Applications*, 2017.
3. A. Banerjee, **J. C. Quiroz**, I. Abu-Mahfouz, "Statistical Comparison of Feature Sets for Time Series Classification of Dynamic System Response," *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*, 2016.

2. A. Banerjee, **J. C. Quiroz**, S. J. Louis, "A Computational Model of Collaborative Creativity: A Meta-Design Approach," *International Journal of Knowledge and Systems Science*, 2011.
1. M. Nicolescu, R. Leigh, A. Olenderski, S. Louis, S. Dascalu, C. Miles, **J. Quiroz**, R. Aleson, "A Training Simulation System with Realistic Autonomous Ship Control," *Computational Intelligence*,. 2007.

### Conference Proceedings

20. A. Walton, **J.C. Quiroz**, R. Michael, L. Crosby, A. Kiefer, A. Chemero, S. Murphy, "Multi-scaled Measures of Pain Experience in Young Adults with Sickle Cell Disease," *Annals of Behavioral Medicine*, 2018.
19. **J. C. Quiroz**, M.H. Yong, E. Geangu, "Emotion-Recognition Using Smart Watch Accelerometer Data: Preliminary Findings," **Ubicomp** 2017 Workshop on Mental Health: Sensing and Intervention.
18. S. Tan, F. Doshi-Velez, **J. C. Quiroz**, E. Glassman, "Clustering LaTeX Solutions to Machine Learning Assignments for Rapid Assessment," *KDD 2017 Workshop on Advancing Education with Data*.
17. **J. C. Quiroz**, S.M. Dascalu, "Design and Implementation of a Procedural Content Generation Web Application for Vertex Shaders," *25th International Conference on Software Engineering and Data Engineering, SEDE*, 2016.
16. A. Banerjee, **J. C. Quiroz**, I. Abu-Mahfouz, "Statistical Comparison of Feature Sets for Time Series Classification of Dynamical System Response," *ASME 2015 International Mechanical Engineering Congress and Exposition, IMECE*, 2015.
15. A. T. Chan, **J. C. Quiroz**, S. M. Dascalu, F. C. Harris Jr., "An Overview of Brain Computer Interfaces," *30th International Conference on Computers and their Applications, CATA*, 2015.
14. **J. C. Quiroz**, A. Banerjee, S. J. Louis, S. M. Dascalu, "Collaborative Evolution of 3D Models," *Sixth International Conference on Design Computing and Cognition, DCC*, 2014.
13. **J. C. Quiroz**, A. Banerjee, S. J. Louis, "3-D Modeling Using Collaborative Evolution," *Extended Abstract in Genetic and Evolutionary Computation Conference, GECCO*, 2012.
12. **J. C. Quiroz**, A. Banerjee, S. J. Louis, S. M. Dascalu, "Document Design with Interactive Evolution," *2nd International Symposium on Intelligent Interactive Multimedia Systems and Services, KES IIMSS*, 2009.
11. **J. C. Quiroz**, S. J. Louis, A. Banerjee, S. M. Dascalu, "Towards Creative Design Using Collaborative Interactive Genetic Algorithms," *IEEE Congress on Evolutionary Computation, CEC*, 2009.
10. **J. C. Quiroz**, A. Banerjee, S. J. Louis, "IGAP: Interactive Genetic Algorithm Peer to Peer," *Extended Abstract in Genetic and Evolutionary Computation Conference, GECCO*, 2008.
9. A. Banerjee, **J. C. Quiroz**, S. J. Louis, "A Model of Creative Design Using Collaborative Interactive Genetic Algorithms," *Third International Conference on Design Computing and Cognition, DCC*, 2008.
8. **J. C. Quiroz**, S. J. Louis, A. Shankar, S. M. Dascalu, "Interactive Genetic Algorithms for User Interface Design," *IEEE Congress on Evolutionary Computation, CEC*, 2007.
7. **J. Quiroz**, A. Shankar, S. M. Dascalu, S. J. Louis, "Software Environment for Research on Evolving User Interface Designs," *Second International Conference on Software Engineering Advances, ICSEA*, 2007.
6. Shankar, **J. Quiroz**, S. M. Dascalu, S. J. Louis, M. N. Nicolescu, "Sycophant: An API for Research in Context-Aware User Interfaces," *Second International Conference on Software Engineering Advances, ICSEA*, 2007.

5. M. J. J. McMahon, S. M. Dascalu, F. C. J. Harris, **J. Quiroz**, "An Extensible Architecture for Network-Attached Device Management," *Second International Conference on Software Engineering Advances, ICSEA*, 2007.
4. **J. C. Quiroz**, S. J. Louis, S. M. Dascalu, "Interactive Evolution of XUL User Interfaces," *Genetic and Evolutionary Computation Conference, GECCO*, 2007.
3. **J. C. Quiroz**, S. M. Dascalu, S. J. Louis, "Human Guided Evolution of XUL User Interfaces," *ACM CHI Extended Abstracts on Human Factors in Computing Systems, CHI*, 2007.
2. C. Miles, **J. Quiroz**, R. Leigh, S. J. Louis, "Co-Evolving Influence Map Tree Based Strategy Game Players," *IEEE Symposium on Computational Intelligence and Games, CIG*, 2007.
1. F. C. Harris Jr, M. Penick, G. Kelly, **J. C. Quiroz**, S. M. Dascalu, B. T. Westphal, "V-FIRE: Virtual Fire in Realistic Environments," *Software Engineering Research and Practice*, 2005.

### Technical and Legal Reports

3. C. A. Fisher, T. D. Casey, **J. C. Quiroz**, "What Innovators Need to Know – and Need to Do – Under the America Invents Act," American Innovators for Patent Reform, January 2012.
2. **J. C. Quiroz**, "Creative Design Using Collaborative Interactive Genetic Algorithms," Ph.D. Thesis, Computer Science and Engineering, University of Nevada, Reno, May 2010.
1. **J. C. Quiroz**, "Interactively Evolving User Interfaces," Masters Thesis, Computer Science, University of Nevada, Reno, May 2007.

## INVITED TALKS AND PRESENTATIONS

### Invited

2. "Intellectual Property" at the Department of Computer Science and Engineering, University of Nevada, Reno, USA, October 2012.
1. "Creative Design Using Collaborative Interactive Genetic Algorithms" and "Intellectual Property" at the Department of Computer Science, Kean University, Union, New Jersey, USA, March 2011.

### Conference Presentations

11. "Design and Implementation of a Procedural Content Generation Web Application for Vertex Shaders," at the *25th International Conference on Software Engineering and Data Engineering, SEDE*, Denver, USA, September 2016.
10. "Collaborative Evolution of 3D Models" at the *Sixth International Conference on Design Computing and Cognition, DCC14*, London, England, June 2014.
9. "Towards Creative Design Using Collaborative Interactive Genetic Algorithms" at the *IEEE Congress on Evolutionary Computation, CEC*, Trondheim, Norway, May 2009.
8. "Using Coevolution to Understand and Validate Game Balance in Continuous Games" at the *Genetic and Evolutionary Computation Conference, GECCO*, Atlanta, Georgia, USA, July 2008.

7. "A Model of Creative Design Using Collaborative Interactive Genetic Algorithms" at the *Third International Conference on Design Computing and Cognition, DCC*, Atlanta, Georgia, USA, June 2008.
6. "Machine Learning for Identifying Bacterial Promoters" at the Graduate Technical Paper Competition of the 2007 Society of Hispanic Professional Engineers Conference, Philadelphia, Pennsylvania, USA, November 2007.
5. "Software Environment for Research on Evolving User Interface Designs" at the *Second International Conference on Software Engineering Advances, ICSEA*, Cap Esterel, France, August 2007.
4. "Sycophant: An API for Research in Context-Aware User Interfaces" at the *Second International Conference on Software Engineering Advances, ICSEA*, Cap Esterel, France, August 2007.
3. "An Extensible Architecture for Network-Attached Device Management" at the *Second International Conference on Software Engineering Advances, ICSEA*, Cap Esterel, France, August 2007.
2. "Interactive Evolution of XUL User Interfaces" at the Graduate Technical Paper Competition of the 2007 Society of Hispanic Professional Engineers National Technical and Career Conference, Denver, Colorado, USA, January 2007.
1. "V-FIRE: Virtual Fire in Realistic Environments" at the *Software Engineering Research and Practice Conference*, Las Vegas, Nevada, USA, June 2005.

#### Poster Presentations

4. "Patentability of Design State Spaces" at the *Sixth International Conference on Design Computing and Cognition, DCC 2014*, London, England, June 2014.
3. "IGAP: Interactive Genetic Algorithm Peer to Peer" at the *Genetic and Evolutionary Computation Conference, GECCO 2008*, Atlanta, Georgia, USA, July 2008.
2. "Human Guided Evolution of XUL User Interfaces" at the *ACM CHI Human Factors in Computing Systems Conference, CHI 2007*, San Jose, California, USA, May 2007.
1. "Interactive Evolution of User Interfaces" at the MGE@MSA/WAESO Student Research Conference in Phoenix, Arizona, USA, April 2007.

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#### FUNDING

2. 2016-2017 **Lancaster University**, Predicting the Emotion of a User Based on Walking Patterns, Award to **Juan Quiroz** (PI), Kwang In Kim (Co-PI), Yong Min Hooi, and Angela Lee Siew Hoong £15,000.
1. 2016 **Jeffrey Cheah Travel Grant for Southeast Asia Studies at Harvard** \$4,000 USD.

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#### AWARDS

- Jeffrey Cheah Travel Grant for Southeast Asia Studies at Harvard University.

- Nomination for Best Student Paper Award at the IEEE Congress on Evolutionary Computation, Trondheim, Norway, May 2009.
  - Best Presentation Award at the Third International Conference on Design Computing and Cognition, Atlanta, Georgia, USA, June 2008
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## STUDENT SUPERVISION

### Current Students

- (2019 – Present) Associate supervisor of PhD student Huong Ly Tong.
- (2019 – Present) Primary supervisor of Bachelor of Engineering (Honours) Software Engineering student Tristan Bongolan.

### Students Supervised to Completion

- (2019) Primary supervisor of Bachelor of Engineering (Honours) Software Engineering student Deye Chen, Marks 84/100 [Macquarie University].
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## TEACHING

### Fall 2014 – Aug 2017: Sunway University – Lecturer

- PRG1114 – Programming Concepts and Problem Solving
  - CSC1024 – Programming Principles
  - CSC2044 – Concurrent Programming
  - WEB202 – Web Programming
  - PRG102D – Basic Programming Concepts
  - Internship coordinator
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## SERVICE

### Program Committee

- ISCA 28<sup>th</sup> International Conference on Software Engineering and Data Engineering (SEDE 2019), San Diego, California, USA, October 2019.
- ISCA 27<sup>th</sup> International Conference on Software Engineering and Data Engineering (SEDE 2018), New Orleans, Louisiana, USA, October 2018.
- ISCA 26<sup>th</sup> International Conference on Software Engineering and Data Engineering (SEDE 2017), San Diego, California, USA, October 2017.
- Fourth International Workshop on Collaboration and Virtual Environments (CoVE-2016), Orlando, Florida, USA, October 2016.

- 22<sup>nd</sup> International Conference on Virtual Systems & Multimedia (VSMM 2016), Kuala Lumpur, Malaysia, October 2016.
- ISCA 25<sup>th</sup> International Conference on Software Engineering and Data Engineering (SEDE 2016), Denver, Colorado, USA, September 2016.
- ISCA 24<sup>th</sup> International Conference on Software Engineering and Data Engineering (SEDE 2015), San Diego, California, USA, October 2015.
- Third International Workshop on Collaboration and Virtual Environments (CoVE-2015), Atlanta, Georgia, USA, June 2015.

#### **Reviewer – Journals**

- Mathematics (2019).
- Measurement (2019).
- Medical Journal of Australia (2019).
- npj Digital Medicine (2019)
- Journal of Medical Internet Research (2018, 2019).
- JMIR Mental Health (2018, 2019).
- BMC Medical Informatics and Decision Making (2018, 2019).
- Intelligent Automation and Soft Computing (2017, 2018).
- Special Issue of Information Systems Frontiers “Disaster Management and Information Systems” (2017).

#### **Reviewer – Conferences**

- Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI 2020)
- AMIA 2019 Annual Symposium
- 12th Australasian Conference on Health Informatics and Knowledge Management (2018)
- Designing Interactive Systems (DIS 2017).
- The 5th International Conference on Soft Computing, Intelligent System and Information Technology (ICSIIT 2017).
- Joint International Conference on Optimization of Electrical and Electronic Equipment (OPTIM 2017).
- International Conference on Information Technology and Multimedia at UNITEN (ICIM $\mu$  2015).

#### **Departmental Committees**

- BIS Business Analytics Program Committee, Member, Sunway University, May 2016 – August 2017.
- MSc. in Information Systems Program Committee, Member, Sunway University, May 2015 – August 2017.

#### **Associate Editor**

- International Journal of Computers and Their Applications, since 2015.