Miguel A. Solís Cid

CONTACT INFORMATION

Av. Cerro Paranal #375,
Depto. 706. Antofagasta, Chile.

Mobile phone: (56)-9-83287452
Nationality: Chilean
E-mail: miguel.solis@innovacionyrobotica.com
Web: http://equipo.innovacionyrobotica.com/∼miguel.solis

RESEARCH INTERESTS

adaptive control, reinforcement learning, robotics.

EDUCATION

Universidad Técnica Federico Santa Maria, Valparaíso, Chile

Dr.Eng., Informatics, April, 2017.

- Dissertation Topic: "Reinforcement Learning on Control Systems with Unobserved States".
- Advisor: Héctor Allende / Manuel Olivares

M.Sc., Electronics, August, 2012.

- Masters Project: "State estimation of systems observed over erasure channels".
- Advisor: Eduardo Silva

Electronics Engineering, August, 2012.

CAREER EXPERIENCE

Universidad Católica del Norte, Antofagasta, Chile

Interim Academic **July, 2018 - today**
Full-time position for Computing & Systems Engineering Dept.

Courses:

- Internet of Things, 01-2019
- Operating Systems, 01-2019, 02-2018
- Robotics Fundamentals, 02-2018

Universidad Andrés Bello, Viña del Mar, Chile

Instructor **April, 2017 - June, 2018**
Full-time position for Informatics Department at Engineering Faculty.
Academic Assessment Score: 4.0/5

Part-time Lecturer **August, 2013 - March, 2017**

Courses:

- INF-1202 Computers Architecture, 01-2018, 01-2017, 01-2016.
- INS-121 Computer Programming I (Python 2.7), 01-2018, 01-2014.
- ICF-122 Programming Fundamentals (C), 02-2017.
- INF-1203 Operating Systems, 02-2017, 02-2016, 02-2015.
- ITC-1701 Computer Networks, 01-2017, 01-2016, 01-2015.
- INS-243 Smart City Apps (co-taught), 01-2017, 01-2016.

Undergraduate Supervision
Advisor for undergraduate thesis on informatics engineering.

- Indoor Control: Sistema de monitoreo y control para cultivos de interior - Javier León 2017.
- Control de acceso dactilar - Gabriel Contreras 2017.
- Conversando con R.I.T.A. (Robotic Internet of Things Assistant) - Gonzalo Burgos 2017.
- Laboratorio remoto de robótica educativa - Gonzalo Contreras 2018.

Universidad Técnica Federico Santa Maria, Valparaíso, Chile

Part-time Lecturer **August, 2012 - June, 2018**
Co-taught undergraduate level courses for first-year students. Shared responsibility for lectures, exams and grades.

- IWI-131 Computer Programming (Python 2.7.x), 01-2018, 2017, 2016, 2015, 01-2014, 2013, 02-2012.
- IWG-101 Introduction to Informatics Engineering, 02-2013.

Undergraduate Supervision
Co-advisor for undergraduate thesis on informatics engineering.

- Generación de estrategia defensiva en RoboCup SSL con aprendizaje reforzado Franco Ollino 2016.

Publications

Journal Articles

[1] M.A. Solis, M. Olivares and H. Allende. A Switched Control Strategy for Swing-Up and State Regulation for the Rotary Inverted Pendulum. Studies in Informatics and Control, 28(1): 45-54, 2019. ISSN 1220-1766.

[2] M.A. Solis, M. Olivares and H. Allende. Stabilizing Dynamic State Feedback Controller Synthesis: A Reinforcement Learning Approach. Studies in Informatics and Control, 25(2): 245-254, 2016. ISSN 1220-1766.

[3] E.I. Silva and M.A. Solis, 'An alternative look at the constant-gain Kalman filter for state estimation over erasure channels', IEEE Transactions on Automatic Control, 58(12): 3259-3265, 2013. ISSN 0018-9286.

Book Chapters

[1] O. Silva and M.A. Solis, 'Evolutionary Function Approximation for Gait Generation on Legged Robots'. Nature-Inspired Computing for Control Systems, Springer, 2016. Editor: Hiram Ponce. DOI: 10.1007/978-3-319-26230-7.

Conference Proceedings

[1] F. Ollino, M.A. Solis and H. Allende, 'Batch Reinforcement Learning on a RoboCup SSL keep-away strategy learning problem'. Proceedings of the 4th Congress on Robotics and Neuroscience, 2018.

[2] P. Navarrete, C.J. Nettle, C. Oliva and M.A. Solis, 'Fostering Science and Technology Interest in Chilean Children with Educational Robot Kits'. Proceedings of the 13rd IEEE Latin American Robotics Symposium, 2016.

[3] G.A. Ahumada, C.J. Nettle and M.A. Solis, 'Accelerating Q-learning through Kalman Filter Estimations applied in a RoboCup SSL Simulation', Proceedings of the 10th IEEE Latin American Robotics Symposium, 2013.

[4] E.I. Silva and M.A. Solis, 'An approach to stationary state estimation with missing data', Proceedings of the 9th IEEE International Conference on Control & Automation, 2011.

Projects

R&D Funding

[1] DI-1303-16/RG Self-aware and self-organizing things for reconfiguring Web mashups of things during runtime.
Funded by UNAB.
Co-researcher (2016-2017)

[2] FDI 2011 and FDI 2012 (students projects line) Equipo RoboCup F-180.
Funded by Mineduc.
Project leader (2012-2013)

Invited Talks

[1] Aprendizaje reforzado: conceptos básicos y aplicaciones en robótica. VIII Escuela de Invierno para la Divulgación de la Robótica, Neurociencia y Nanotecnología. UTFSM - August, 2014.

[2] Introducción práctica al aprendizaje reforzado en aplicaciones de robótica. 4to Congreso de Robótica y Neurociencia (CRoNe 2018). UTFSM, Chile - November, 2018.

[3] Herramientas para cómputo y visualización de datos en python 3.x. 4to Congreso de Robótica y Neurociencia (CRoNe 2018). UTFSM, Chile - November, 2018.

[4] Introducción al aprendizaje reforzado con Jupyterhub. XIX Congreso Internacional de Informática y Sistemas (CIIS 2018). UNJBG, Perú - November, 2018.

[5] Aprendizaje reforzado en sistemas de control. IX Congreso Internacional de Computacin e Informtica del Norte de Chile (INFONOR 2018), Track Congreso Infonor & Tecnologías Emergentes. UNAP, Chile - September, 2018.

[6] Conceptos básicos de aprendizaje reforzado y sus aplicaciones en robótica.IX Congreso Internacional de Computacin e Informtica del Norte de Chile (INFONOR 2018), Track Robótica y Automática. UNAP, Chile - September, 2018.

[7] Aprendizaje reforzado: conceptos básicos y aplicaciones en robótica. Tutorial - XIII Escuela de Verano de Inteligencia Computacional (EVIC 2017). UV, Chile - December, 2017.

[8] Numpy y herramientas de visualización en python. Workshop - 3er Congreso de Robótica y Neurociencia (CRoNe 2017). UTFSM, Chile - October, 2017.

Scientific Activities

Editorial Activities

- Member of the Editorial Board for *Mathematics and Computer Science* journal.
  ISSN: 2575-6036 Nov. 2018 - Nov. 2020

Reviews

- IEEE Latin American Transactions
- CRoNe 2018: 4th Congress on Robotics and Neuroscience
- WDKE 2018: II Workshop on Data and Knowledge Engineering
- SSN 2018: IV School on Systems and Networks
- TICXED 2018: XIX Congreso Chileno de TICS para la Educación
- WDKE 2017: I Workshop on Data and Knowledge Engineering

Jury Committee (invited)

- 2019. (M.Sc. on Electronics Engineering). Hans Lehnert, *Mecanismos Bio-Inspirados Aplicados a Tareas de Navegación en Agentes Artificiales.*
  Universidad Técnica Federico Santa María, Departamento de Electrónica
  Director de Tesis: Dr. María José Escobar.
- 2017. (M.Sc. on Biomedical Engineering). Alvaro Jara, *Reproducción de la altitud barométrica del centro de masa de una persona a partir de videos de caídas*
  Universidad de Valparaíso, Escuela de Ing. Civil Biomédica
  Director de Tesis: Dr. Pablo Reyes.

Organizing Committee of Conferences

- Workshops Chair of IEEE ICDL-EpiRob 2020: International Conference on Development and Learning, and on Epigenetic Robotics
- General Chair of CRoNe 2016: 2nd Congress on Robotics and Neuroscience
- General Chair of CRoNe 2015: 1st Congress on Robotics and Neuroscience

Program Committee of Conferences

- CRoNe 2018: 4th Congress on Robotics and Neuroscience
- WDKE 2018: II Workshop on Data and Knowledge Engineering at INFONOR 2018
- TICXED 2018: XIX Congreso Chileno de TICS para la Educación at JCCC 2018

Awards and Honors

- Academic Excellence Award, Graduate School, Universidad Técnica Federico Santa María 2017
- Doctoral Scholarship, Universidad Técnica Federico Santa María 2012 - 2017
- Scientific Research Initiation Program, Universidad Técnica Federico Santa María 2015
- Visiting Scholar, University of Texas at Arlington Aug.2014 - Feb.2015
  Learning and Adaptive Robotics Lab.
  Supervisor: Dr. Manfred Huber
- Master in Science Scholarship, Universidad Técnica Federico Santa María 2010 - 2012
- Scientific Research Initiation Program, Universidad Técnica Federico Santa María 2011
- List of Honor of Students of Universidad Técnica Federico Santa María 2009 - 2012

English Skills

- TOEFL: Sept., 2016

Skill	Level
Reading	High (22-30)
Listening	Intermediate (14-21)
Speaking	Intermediate (14-21)
Writing	Intermediate (14-21)

- Total score: 80

Computer Skills

- Robotics Simulators: RobotinoSIM, Roboguide.
- Languages: C, Python, Matlab, some use of Unix shell scripts, LabView, LaTeX.

Miscellaneous

- Microdegrees program Coordinator 2017 - today
  `http://www.innovacionyrobotica.com/microgrados`
- Competitive Programming Coach 2017
  `UNAB - Olimpiadas Chilenas de Informática`
- Technical Consultant 2016 - 2018
  `http://www.centrosteam.com`
- Co-organizer Latin American Robotics Week Oct. 27-29, 2016
  `http://www.roboticsweekLA.com`
- Speaker at Vocational workshops for school students entitled 'Educación Futuro' Sept. 2015
  Universidad Andrés Bello
- Member of 'Equipo RoboCup', Innovación y Robótica Estudiantil, UTFSM 2011 - 2014
- Member of 'Equipo Lego', Innovación y Robótica Estudiantil, UTFSM 2009 - 2011

Professional Affiliations

- General Secretary - Centro de Innovación y Robótica Est.: Dec,2016 - today
- IEEE RAS (Robotics and Automation Society) Member 2014 - today
- IEEE Member 2011 - today