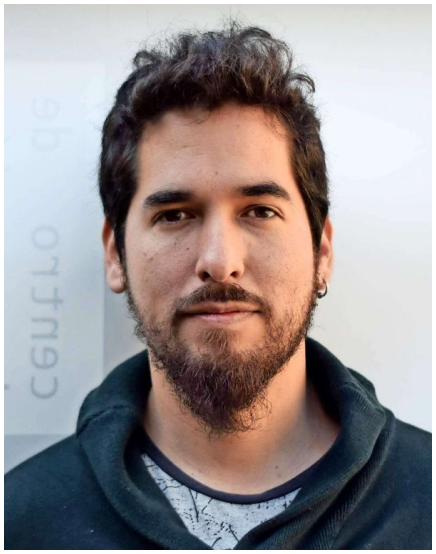

MIGUEL A. SOLIS

Head at Automation and Robotics Engineering,
Universidad Andrés Bello.

PROGRAMMING SKILLS

Python

C

NumPy, Pandas

Matlab

LabView

LaTeX

Unix

CONTACT

+56 9 8328 7452

miguel.solis@unab.cl

WORK EXPERIENCE

Head at Automation and Robotics Engineering — Feb. 20 - Today
Universidad Andrés Bello. Santiago, Chile

Undergraduate courses:

- Thesis supervision — 15 students
- Industrial Process Control — 2020
- Introduction to Automatic Control — 2020
- Electric Circuits and Machines — 2020

Graduate courses:

- Thesis supervision — 3 students
- Internet of Things — 2021
- Advanced Digital Networks — 2021-2022
- Data Science Projects — 2022
- Reinforcement Learning for Autonomous Agents — 2022

Interim Academic — Jul. 18 - Jan. 20
Universidad Católica del Norte. Antofagasta, Chile

Taught courses:

- Operating Systems — 2018-2019
- Robotics Fundamentals — 2018-2019
- Internet of Things — 2019

Instructor — Apr. 17 - Jun. 18
Universidad Andrés Bello. Viña del Mar, Chile

Undergraduate thesis supervision (4 students).
Taught courses:

- Computers Programming (Python) — 2014-2018
- Operating Systems — 2014-2017
- Computer Networks — 2014-2017

Part-time lecturer — Aug. 12 - Jun. 18
Universidad Técnica Federico Santa María. Valparaíso, Chile

Taught courses:

EDUCATION

2012 - 2017

Dr.-Eng., Informatics
Universidad Técnica Federico Santa María
Reinforcement Learning on Control Systems with Unobserved States.
Supervisors:

- Prof. Héctor Allende, Informatics Dept.
- Prof. Manuel Olivares, Electronics Dept.

2010 - 2012

M.Sc., Electronics
Universidad Técnica Federico Santa María
State estimation of systems observed over erasure channels.
Supervisor:

- Prof. Eduardo I. Silva.

2006 - 2012

Electronics Engineering
Universidad Técnica Federico Santa María
Professional title with B.Sc. degree.

LANGUAGES

English

TOEFL
Sept. 2016

Reading
Listening
Writing
Speaking

- Computers Programming (Python) 2012-2018

PUBLICATIONS

Journals Web of Science

[1] R. Torres, **M.A. Solis**, R. Salas and A.F. Bariviera. A Dynamic Linguistic Decision Making Approach for a Cryptocurrency Investment Scenario. IEEE Access, vol.8: 228514-228524, **2020**. (e)ISSN 2169-3536.

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

[3] **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.

[4] 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.

Conference Proceedings Scopus

[1] F. Coiro, **M.A. Solis**, C.J. Nettle and A. Chila, Pre-robot: an open-source educational robotics platform for preschoolers. Proceedings of the 5th Congress on Robotics and Neuroscience, **2020**.

[2] 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**.

[3] 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**.

[4] 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**.

[5] 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**.

Book Chapters

[1] O. Silva and **M.A. Solis**, Evolutionary Function Approximation for Gait Generation on Legged Robots. In Nature-Inspired Computing for Control Systems, Springer, **2016**. Editor: Hiram Ponce.

WOS JOURNAL REVIEWS

- IEEE Latin America Transactions.
- IEEE Transactions on Smart Grid.
- IEEE Transactions on Systems, Man and Cybernetics: Systems.

CONFERENCES

LACORO 2023

Organizer
Latin American Summer School on Cognitive Robotics

ALA 2022

Program Committee
Adaptive and Learning Agents Workshop at AAMAS 2022

ISR 2022

Technical Committee
International Symposium on Robotics

SENTI Workshop 2022

Technical Committee
International Workshop on Sentiment Analysis and Emotion Recognition for Social Robots

IWoSR 2021

Technical Committee
International Workshop on Service Robotics

TICXED 2021

Program Committee
Chilean Congress on IT and Education

HARL 2021

Co-organizer
Workshop on Human-aligned Reinforcement Learning for Autonomous Agents and Robots at IEEE ICDL 2021

IEEE ICDL 2020

Workshops Chair
International Conference on Development and Learning

LACORO 2020

Organizer
Latin American Summer School on Cognitive Robotics

- BioMedical Engineering Online.
- Neural Computing and Applications.

PROJECTS

Principal Researcher from Chilean group 2021-2023

Red de prevención, mitigación y rehabilitación de áreas afectadas por incendios forestales (REDPREMIA).
Funded by: Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo CYTED.

Advisor 2020-2022

Robótica educativa a distancia para actividades docentes a través de laboratorios remotos de alta disponibilidad y escalabilidad.
Funded by: Fundación Gabriel & Mary Mustakis.

Co-researcher 2016-2017

Self-aware and self-organizing things for reconfiguring Web mashups of things during runtime.
Funded by: Universidad Andrés Bello.

Project leader 2012-2013

Equipo RoboCup F-180 (students line)
Funded by: Mineduc (FDI 2011 and FDI 2012).

INVITED TALKS

Tutorial

Arduino Day 2022 Chile
Programación de Arduino mediante CLI.

Plenary Talk

CIIS 2021: XXII Congreso Internacional de Informática y Sistemas.
Toma de decisiones con un enfoque difuso para transacciones con criptomonedas.

Tutorial

Arduino Day 2021 Chile
Programación de Arduino mediante CLI.

Plenary Talk

CIIS 2019: XX Congreso Internacional de Informática y Sistemas.
Agregación de información con lógica difusa para la toma de decisiones en entornos dinámicos.

TICXED 2020

Program Committee
Chilean Congress on IT and Education

CRoNe 2019

Program Committee
5th Congress on Robotics and Neuroscience

INFONOR 2019

Track co-chair
10th International Conference on Computing and Informatics in Northern Chile

CRoNe 2018

Program Committee
4th Congress on Robotics and Neuroscience

WDKE 2018

Program Committee
2nd Workshop on Data and Knowledge Engineering at INFONOR 2018

TICXED 2018

Program Committee
19th Chilean Congress on IT and Education at JCCC 20188

CRoNe 2016

Organizer
2nd Congress on Robotics and Neuroscience

CRoNe 2015

Organizer
1st Congress on Robotics and Neuroscience

AWARDS

2022

Senior Membership Elevation
IEEE

Plenary Talk

CIIS 2018: XIX Congreso Internacional de Informática y Sistemas.
Introducción al aprendizaje reforzado con Jupyterhub.

Plenary Talk

CRoNe 2018: IV Congress on Robotics and Neuroscience.
Introducción práctica al aprendizaje reforzado con aplicaciones en robótica.

Tutorial

CRoNe 2018: IV Congress on Robotics and Neuroscience.
Herramientas para cómputo y visualización de datos en Python 3.x.

Tutorial

EVIC 2017: XIII Escuela de Verano de Inteligencia Computacional.
Aprendizaje reforzado: conceptos básicos y aplicaciones en robótica.

Tutorial

CRoNe 2017: III Congress on Robotics and Neuroscience.
NumPy y herramientas de visualización en Python.

JURY COMMITTEE (INVITED)

Dr.Sc. on Automation Engineering

Universidad de Santiago de Chile.
Oscar Loyola, 2021.

Nueva metodología para la interacción entre múltiples robots cognitivos basados en elementos jerárquicos.
Advisor: Prof. John Kern.

M.Sc. on Biomedical Engineering

Universidad de Valparaíso.
Mailyn Calderón, 2020.

Biomechanical signal processing and machine learning frameworks for the human movement analysis.
Advisor: Prof. Carolina Saavedra.

M.Sc. on Informatics Engineering

Universidad Católica del Norte.
Rubén Castro, 2019.

Diseño e implementación de un sistema de control de nivel no lineal para ensayos de controladores basados en sistemas inteligentes.
Advisor: Prof. José Gallardo.

2020

Excellent Oral Presentation
5th Congress on Robotics and Neuroscience

2017

Academic Excellence Award
Graduate School, Universidad Técnica Federico Santa María

2015

Scientific Research Initiation Program
Universidad Técnica Federico Santa María

2011

Scientific Research Initiation Program
Universidad Técnica Federico Santa María

2009-2012

List of Honor of Students
Universidad Técnica Federico Santa María

MEMBERSHIPS

IEEE, Member	+14 years
IEEE RAS, Member	+8 years
Centro de Innovación y Robótica	+5 years
IEEE T.C. on Neuro-Robotics Systems	+4 years

M.Sc. on Informatics Engineering

Universidad Católica del Norte.
Félix Nilo, 2019.

Navegación de un vehículo autónomo flotante (ASV) de bajo costo en un entorno semiestructurado.
Advisor: Prof. Ricardo Pérez.

M.Sc. on Informatics Engineering

Universidad Católica del Norte.
Carolina Silva, 2019.

Diseño, caracterización y fabricación de una pinza robótica interconectable modular con robótica blanda.
Advisor: Prof. José Gallardo.

M.Sc. on Electronics Engineering

Universidad Técnica Federico Santa María.
Hans Lehnert, 2019.

Mecanismos Bio-Inspirados Aplicados a Tareas de Navegación en Agentes Artificiales.
Advisor: Prof. María José Escobar.

M.Sc. on Biomedical Engineering

Universidad de Valparaíso.
Álvaro Jara, 2017.

Reproducción de la altitud baroméetrica del centro de masa de una persona a partir de videos de caídas.
Advisor: Prof. Pablo Reyes.

MISCELLANEOUS

President 2022-2023

President of the Executive Committee at Technical Chapter IEEE Robotics and Automation Society Chile Centro Section.

Guest Editor 2022

Part of the guests editors for Research Topic on Cognitive Inspired Aspects of Robot Learning. Frontiers in Neurorobotics.

Guest Editor 2021-2022

Part of the guests editors for Topical Collection (Special Issue) on *Human-aligned Reinforcement Learning for Autonomous Agents and Robots*. Neural Computing and Applications journal.

Academic Committee at Professional Master 2021 - Today

Part of the Academic Committee at Professional Master degree *Magíster en Tecnologías de la Información y Telecomunicaciones*. UNAB.