



## PROGRAMMING SKILLS

Python



C



NumPy, Pandas



Matlab



LabView



L<sup>A</sup>T<sub>E</sub>X



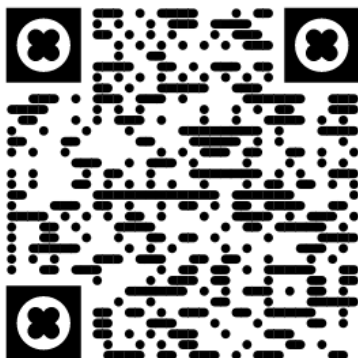
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## CONTACT

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# MIGUEL A. SOLIS

Head at Automation and Robotics Engineering,  
Universidad Andrés Bello.

## WORK EXPERIENCE

Head at Automation and Robotics Engineering

Associate Professor 2023-today

Assistant Professor 2020-2022

Universidad Andrés Bello. Santiago, Chile

Feb. 20 - Today

Undergraduate courses:

- Thesis supervision +30 students
- Industrial Process Control 2020
- Introduction to Automatic Control 2020
- Electric Circuits and Machines 2020
- Automata Theory and Formal Languages 2023
- Computers Programming (Python 3.x) 2024-2026

Graduate courses:

- Thesis supervision +10 students
- Internet of Things 2021
- Advanced Digital Networks 2021-2022
- Data Science Projects 2022
- Reinforcement Learning for Autonomous Agents 2022-2023
- IoT and Blockchain 2023-2026

Invited Lecturer

Universidad Continental. Lima, Perú

2026

Graduate courses:

- Machine Learning 2026
- Robotics 2026

Invited Lecturer

Universidad Central. Santiago, Chile

2022-2026

Graduate courses:

- Thesis supervision 2 students
- Internet of Things 2022-2024, 2026
- Robotics Fundamentals 2022-2023

# 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

Feb. 2026: C1

#### Reading

#### Listening

#### Writing

#### Speaking

### Invited Lecturer

Universidad Adolfo Ibáñez. Santiago, Chile

2023-2025

#### Undergraduate courses:

- Internet of Things 2024
- Programming Languages 2024
- Data Structures & Algorithms 2024
- Operating Systems 2023, 2025

#### Graduate courses:

- Reinforcement Learning for Autonomous Agents 2023

### Invited Lecturer

Universidad Católica del Norte. Coquimbo, Chile

2023

#### Taught courses:

- Artificial Intelligence 2023

### Interim Academic

Universidad Católica del Norte. Antofagasta, Chile

Jul. 18 - Jan. 20

#### Taught courses:

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

### Instructor

Universidad Andrés Bello. Viña del Mar, Chile

Apr. 17 - Jun. 18

Undergraduate thesis supervision (4 students).

#### Taught courses:

- Computers Programming (Python) 2014-2018
- Computers Programming (C) 2016-2017
- Computer Architecture 2014-2017
- Operating Systems 2014-2017
- Computer Networks 2014-2017

### Part-time lecturer

Universidad Técnica Federico Santa María. Valparaíso, Chile

Aug. 12 - Jun. 18

#### Taught courses:

- Computers Programming (Python 2.x) 2012-2018

# PUBLICATIONS

ORCID: 0000-0002-5735-8834

# CONFERENCES (LAST 5 YEARS)

## Jornadas Chilenas de Robótica e IA

**Poster & Grant Chair**  
Jornadas Chilenas de Robótica e Inteligencia Artificial

## HRFest 2026

**Regional Outreach Chair**  
Humanoid Robotics Fest

## IEEE SGSMA 2026

**Local Organizing Committee**  
5th International Conference on Smart Grid Synchronized Measurements and Analytics

## LACORO 2025

**Finance & Grant Chair**  
Latin American Summer School on Cognitive Robotics

## IEEE ChileCon 2025

**Track Chair: Robotics**  
Chilean Conference on Electrical Electronic Engineering, Informatics and Communications Technology

## OpenRIT 6G

**Local Chair**  
Open Research Infrastructures and Toolkits Workshop 2025

## LACORO 2024

**Registration & Grant Chair**  
Latin American Summer School on Cognitive Robotics

## IEEE ChileCon 2023

**Program Committee**  
Chilean Conference on Electrical Electronic Engineering, Informatics and Communications Technology

## Journals

Web of Science

- [1] J. Ruiz-del-Solar, J. Godoy, R. Verschae, K. Ramirez-Amaro, S. Escalda, D. Luhr, **M.A. Solis**. IEEE RAS ICRA 2025 LA@ Chile Satellite Event: Expanding Robotics Horizons in Latin America. IEEE Robotics & Automation Magazine, **2025**. ISSN 1070-9932
- [2] **M.A. Solis**, S.S. Thomas, C.A. Choque-Surco, E.A. Taya-Acosta and F. Coiro. Bayesian Optimization for the Synthesis of Generalized State-Feedback Controllers in Underactuated Systems. MDPI Mathematics, **2025**. ISSN 2227-7390.
- [3] I. Jirón-Araya, R. Jiménez, R. Martínez-Peláez and **M.A. Solis**. NeuralSyncTester: A tool for research and teaching in neural synchronization of multilayer tree parity machine networks. SoftwareX, **2025**. (e)ISSN 2352-7110.
- [4] M. Calderón-Díaz, R. Jiménez, C. Saavedra, J.P. Váscónez, R. Torres, **M.A. Solis**, D. Velandia and R. Salas. Evaluating the Influence of Physical Activity on Gait Aging Using Multilevel Machine Learning. IEEE Access, **2025**. (e)ISSN 2169-3536.
- [5] F. Cruz, **M.A. Solis** and N. Navarro-Guerrero. Cognitive inspired aspects of robot learning (**editorial**). Frontiers in Neurorobotics, **2023**. (e)ISSN 1662-5218.
- [6] F. Cruz, T.G. Karimpanal, **M.A. Solis**, P. Barros and R. Dazeley. Human-aligned reinforcement learning for autonomous agents and robots (**editorial**). Neural Computing and Applications, **2023**. ISSN 0941-0643.
- [7] 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.
- [8] **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.
- [9] **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.
- [10] 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.

## Journals

Scopus

- [1] J. Cornejo, S. Barrera, C.H. Ruiz, F. Gutierrez, M.O. Casasnovas, ... and E.A. L'huillier. Industrial, Collaborative and Mobile Robotics in Latin America: Review of Mechatronic Technologies for Advanced Automation, Emerging Science Journal, 7(4): 1430-1458, **2023**. (e)ISSN 2610-9182.

## Conference Proceedings

Scopus

- [1] R. Torres, **M.A. Solis**, V. Martinez and R. Salas, A Nested-Cascade Machine Learning Based Model for Intrusion Detection Systems. IEEE Chilean Conference on Electrical, Electronics Engineering, Information and Communication Technologies (CHILECON), **2023**.
- [2] 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**.

## SENTIROBOTS Workshop 2023

### Technical Committee

2nd International Workshop on Sentiment Analysis and Emotion Recognition for Social Robots

## TICXED 2023

### Program Committee

Chilean Congress on IT and Education

## ISR 2023

### Technical Committee

International Symposium on Robotics

## ALA 2023

### Program Committee

Adaptive and Learning Agents Workshop at AAMAS 2023

## LACORO 2023

### Organizer

Latin American Summer School on Cognitive Robotics

## ICoSR 2023

### Technical Committee

2nd International Conference on Service 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

[3] 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**.

[4] 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**.

[5] 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**.

[6] 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.

## PROJECTS (LAST 5 YEARS)

### Advisor

2023

1. Sistema convertidor de plástico a combustible móvil.

**Funded by:** ANID Fondef VIU.

### Principal Investigator

2023

2. exploreCSR program (explore Computer Science Research) + Supplemental REU Funding (research experience for undergraduates).

**Funded by:** Google Research.

### Principal Researcher from Chilean group

2021-2023

3. 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

4. Robótica educativa a distancia para actividades docentes a través de laboratorios remotos de alta disponibilidad y escalabilidad.

**Funded by:** Fundación Gabriel & Mary Mustakis.

## 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

## AWARDS

### 2025

Internationalization Contribution  
UNAB

### 2024

Inspiring Lecturer  
UNAB

### 2022

Senior Membership Elevation  
IEEE

### 2020

Excellent Oral Presentation  
5th Congress on Robotics and Neuroscience

### 2017

Academic Excellence Award  
Graduate School, Universidad Técnica Federico Santa María

### 2011 and 2015

Scientific Research Initiation Program  
Universidad Técnica Federico Santa María

## PATENTS

### Software patent

Departamento de Derechos Intelectuales, Chile.

2024

I. Jirón, M.A. Solis, D. Urrutia, J. Littin. Autenticación Neuronal de Dispositivos en Redes IoT. Granted on August 12, 2024.

## EDITORIAL ACTIVITIES

### Guest editor

Neural Computing and Applications

2023

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

### Guest editor

Frontiers in Neurorobotics

2023

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

### Journal Reviews

- IEEE Latin America Transactions.
- IEEE Transactions on Smart Grid.
- IEEE Transactions on Systems, Man and Cybernetics: Systems.
- BioMedical Engineering Online.
- Neural Computing and Applications.

## INDUSTRY AND CONSULTANCY

### Technical Consultant

Akasa - Antofagasta, Chile

2024

Technical consultancy

### Advisor

Centro de Innovación y Robótica - Valparaíso, Chile

2021-2023

Technical advisor

### Cybersecurity Board at Senate of Chile

2022

Part of the Cybersecurity Board within the Future Challenges, Science, Technology and Innovation Committee at Senate of Chile.

### Technical Consultant

STNG - Antofagasta, Chile

2019-2020

Technical consultancy

## 2009 to 2012

### List of Honor of Students

Universidad Técnica Federico  
Santa María

## EXTERNAL EXAMINER

### Dr. em Engenharia de Computação (2024)

#### Cristian Millan.

Universidade de Pernambuco.

*Teaching Proxemic Behavior to  
Cognitive Agents with Reinforce-  
ment Learning.*

**Advisor:** Prof. Bruno Torres Fer-  
nandes

### Dr.Sc. on Automation Engineering (2021)

#### Oscar Loyola.

Universidad de Santiago de  
Chile.

*Nueva metodología para la in-  
teracción entre múltiples robots  
cognitivos basados en elemen-  
tos jerárquicos.*

**Advisor:** Prof. John Kern

### M.Sc. on Biomedical Engineering (2020)

#### Maily Caldeón.

Universidad de Valparaíso.

*Biomechanical signal process-  
ing and machine learning frame-  
works for the human movement  
analysis.*

**Advisor:** Prof. Carolina Saave-  
dra.

### M.Sc. on Informatics Engineering (2019)

#### Rubén Castro.

Universidad Católica del Norte.

*Diseño e implementación de un  
sistema de control de nivel no  
lineal para ensayos de contro-  
ladores basados en sistemas in-  
teligentes.*

**Advisor:** Prof. José Gallardo.

### M.Sc. on Informatics Engineering (2019)

## INVITED TALKS (LAST 5 YEARS)

### Tutorial

#### 2nd International School on Artificial Intelligence and Data Science Applications 2025

Programación de ESP32 e integración con Amazon Alexa.

### Tutorial

#### IEEE Latin American Robotics Symposium 2024

Practical Introduction to Reinforcement Learning with Gym in Python.

### Tutorial

#### Escuela Internacional de Primavera sobre Entornos Ubicuos y Apli- caciones de Robots Sociales

Introducción práctica al aprendizaje por refuerzos con Gym en  
Python.

### Tutorial

#### Arduino Day 2023 Chile

Carga inalámbrica de código en Arduino.

### 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.

**Félix Nilo.**  
Universidad Católica del Norte.

*Navegación de un vehículo autónomo flotante (ASV) de bajo costo en un entorno semiestructurado.*

**Advisor:** Prof. Ricardo Pérez.

**M.Sc. on Informatics Engineering (2019)**

**Carolina Silva.**  
Universidad Católica del Norte.

*Diseño, caracterización y fabricación de una pinza robótica interconectable modular con robótica blanda.*

**Advisor:** Prof. José Gallardo.

**M.Sc. on Electronics Engineering (2019)**

**Hans Lehnert.**  
Universidad Técnica Federico Santa María.

*Mecanismos Bio-Inspirados Aplicados a Tareas de Navegación en Agentes Artificiales.*

**Advisor:** Prof. María José Escobar.

**MEMBERSHIPS**

- IEEE, Member

+16 years
- IEEE RAS, Member

+11 years
- Centro de Innovación y Robótica

+8 years
- IEEE T.C. on Neuro-Robotics Systems

+7 years

**MISCELLANEOUS**

**President** 2025 - 2026

President of the Executive Committee at IEEE Chile Centro Section.

**Research Committee Delegate** 2023 - Today

Research Committee Delegate to the IFR (International Federation of Robotics) General Assembly.

**President** 2023 - Today

President at NGO Centro de Innovación y Robótica.

**Vice-President** 2023 - 2024

Vice-President of the Executive Committee at IEEE Chile Centro Section.

**President** 2022 - 2023

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

**Academic Committee at Professional Master** 2021 - Today

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

**Volunteer adviser at PAR Explora Antofagasta** 2019

Volunteer adviser in Investigación Científica Escolar (Science Research for School Students) activity within PAR Explora Antofagasta.

**General Secretary** 2017-2023

General Secretary at NGO Centro de Innovación y Robótica.