



## PROGRAMMING SKILLS

Python



C



NumPy, Pandas



Matlab



LabView



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



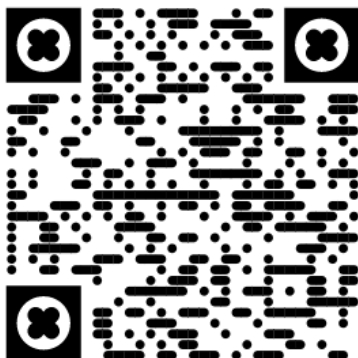
Unix



## 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  
Assistant Professor**

**Universidad Andrés Bello. Santiago, Chile**

Feb. 20 - Today

**Undergraduate courses:**

- Thesis supervision 17 students
- Industrial Process Control 2020
- Introduction to Automatic Control 2020
- Electric Circuits and Machines 2020
- Automata Theory and Formal Languages 2023

**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
- IoT and Blockchain 2023

**Invited Lecturer**

**Universidad Central. Santiago, Chile**

2022-2023

**Graduate courses:**

- Thesis supervision 1 student
- Internet of Things 2022-2023
- Robotics Fundamentals 2022

**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:**

# 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

- 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) 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 State Regulation 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**.

# CONFERENCES

## 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

[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.

# PROJECTS

## Principal Investigator

2023

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

**Funded by:** Google Research.

## 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).

# EDITORIAL ACTIVITIES

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

#### 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

#### Guest editor

##### Neural Computing and Applications

2022-2023

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

2022-2023

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.

## INVITED TALKS

#### 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.

#### 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.

#### Plenary Talk

##### CIIS 2018: XIX Congreso Internacional de Informática y Sistemas.

Introducción al aprendizaje reforzado con Jupyterhub.

## 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 2018

## CRoNe 2016

### Organizer

2nd Congress on Robotics and Neuroscience

## CRoNe 2015

### Organizer

1st Congress on Robotics and Neuroscience

## AWARDS

### 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

### 2015

**Scientific Research Initiation Program**  
Universidad Técnica Federico Santa María

### 2011

**Scientific Research Initiation Program**  
Universidad Técnica Federico Santa María

## 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.

### 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.

2009-2012

List of Honor of Students  
Universidad Técnica Federico  
Santa María

MEMBERSHIPS

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

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 barométrica del centro de masa de una persona a partir de videos de caídas.  
Advisor: Prof. Pablo Reyes.

MISCELLANEOUS

Vice-President2023-2024

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

President2022-2023

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

Cybersecurity Board at Senate of Chile2022

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

Academic Committee at Professional Master2021 - Today

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

Volunteer adviser at PAR Explora Antofagasta2019

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