



## PROGRAMMING SKILLS

Python



C



NumPy, Pandas



Matlab



LabView



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



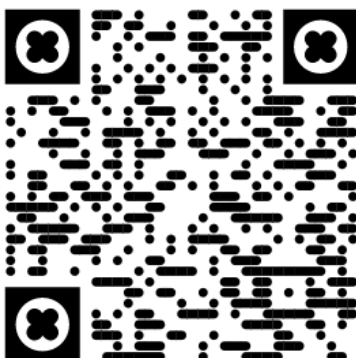
Unix



## 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**  
**Universidad Andrés Bello. Santiago, Chile**

Feb. 20 - Today

### 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**  
**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
- Operating Systems 2014-2017
- Computer Networks 2014-2017

**Part-time lecturer**  
**Universidad Técnica Federico Santa María. Valparaíso, Chile**

Aug. 12 - Jun. 18

### 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 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**.

[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 Sen-  
timent Analysis and Emotion  
Recognition for Social Robots

## IWoSR 2021

### Technical Committee

International Workshop on Ser-  
vice Robotics

## TICXED 2021

### Program Committee

Chilean Congress on IT and Ed-  
ucation

## HARL 2021

### Co-organizer

Workshop on Human-aligned  
Reinforcement Learning for Au-  
tonomous Agents and Robots at  
IEEE ICDL 2021

## IEEE ICDL 2020

### Workshops Chair

International Conference on De-  
velopment 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 in-  
cendios 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 lab-  
oratorios 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.

## 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.

## **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 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

## **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.

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

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 barométrica 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.