

NICOLÁS F. SORIA-ZURITA, PH.D.

ENGINEER | RESEARCHER | DESIGNER | CREATOR | GLOBAL CITIZEN

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ENGINEERING EXPERIENCE

Postdoctoral Scholar

Penn State University

📅 August 2019 – Present 📍 State College, PA

- I performed research investigating the interactions behind humans and computers while working together as hybrid teams for designing complex engineered systems. Current research is focused on understanding and developing an integrated UAVs design testbed, capable of coupling design and optimization tools for the UAVs representation, and system operational and economic strategies for the UAVs implementation. With the testbed, human experiments can be conducted to examine how designers and computer-based design agents interact, support, and influence each other during the design process.

Graduate Research Assistant

Oregon State University

📅 September 2014 – June 2019 📍 Corvallis, OR

- I performed research investigating new paradigms and methods for designing complex engineered systems. My research focused on understanding the human-machine interaction in complex engineered systems during the early design phase to identified failure modes caused by user-system interactions. Current results include the development of a design tool capable of identifying user-system interactions while detecting possible failure modes scenarios during the early design stages using machine learning and data mining techniques.

Design Engineer Consultant

Fundación Vida Silvestre Ecuador

📅 Dec. 2016 - Ongoing 📍 Quito, Ecuador

- I performed multidisciplinary work with veterinarians, biologists, and engineers to support and promote engineering projects focused on conservation and handling of wild fauna and flora in Ecuador. As a team, we have designed the facilities of the first wildlife hospital in Ecuador.

Researcher Mechanical Engineering

Universidad San Francisco de Quito

📅 Aug 2011 – Sept 2014 📍 Quito, Ecuador

- I created and managed the Center of Autonomous Vehicles laboratory. Administered a \$20,000 grant to the development and equipment of the laboratory.
- Lead multidisciplinary engineering teams during the design and construction of three platforms including the USFQ ROV Submarine which was the first aquatic rover developed in the country, the land exploration rover, and the USFQ-Galapagos Unmanned Aerial Vehicle.

RESEARCH AREA

Design theories and methodologies
Human-machine interaction
Human factors engineering
Machine learning
Data mining
System analysis & engineering
Risk and reliability based design
Development and application of computational design tools

EDUCATION

PhD, Mechanical Engineering

Oregon State University

📅 Sept 2016 – June 2019

Advisors: Dr. Irem Y. Tumer & Dr. H. Onan Demirel

MS, Mechanical Engineering

Oregon State University

📅 Sept 2014 – June 2016

BS, Mechanical Engineering

Universidad San Francisco de Quito

📅 Sept 2004 – June 2010

SKILLS

design optimization data analysis
CAD drafting and design prototyping
machine shop 3D printing
sustainable & modern product design
coding: Python, Matlab, LabVIEW, C#, R
CAD-CAM: Fusion360, Solidworks, Catia
database management: mysql, psequel
critical & strategic thinking
technical communication
public speaking

LIFE PHILOSOPHY

*"Learning never exhausts the mind."
Leonardo da Vinci*

TEACHING EXPERIENCE

Graduate Teaching Assistant

Oregon State University

📅 September 2014 – June 2019 📍 Corvallis, OR

- I worked on the Product Realization and Machining Lab teaching students manufacturing procedures, supporting students and research teams in developing engineering requirements, concept generation, prototyping, reverse engineering, and hands-on knowledge, while designing and fabricating parts and components needed for their projects.

Courses Taught:

- Introduction to Manufacturing Process Lectures (Fall 2017/2019)
- Introduction to Design Laboratory (Fall 2016)
- Mechanical Component Design Laboratory (Fall 2015/2017)

Instructor Mechanical Engineering

Universidad San Francisco de Quito

📅 Aug 2011 – Sept 2014 📍 Quito, Ecuador

- I performed an academic advisor role for undergraduate students in the college of engineering.

Courses Taught:

- CAD-Drawing (Spring 2013/2014)
- Capstone Design (Spring 2013/2014)
- CAD-CAM (Fall 2013/2014)
- Design of Mechanisms and Vibrations (Spring 2012/2013)
- Dynamics (Fall 2011/2012)
- Fluid Mechanics (Spring 2011/2012)

PUBLICATIONS

📄 Journal Articles

- **Soria Z, Nicolás F** et al. (2019). "Identification of Human-System Interaction Errors During Early Design Stages Using a Functional Basis Framework". In: *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems Part B: Mechanical Engineering*. 6, pp. 011005-1–011005-15.
- **Soria Z, Nicolás** et al. (2017). "Design of Complex Engineering System Using Multiagent Coordination". In: *Journal of Computing and Information Science in Engineering JCISE* 18 (1530-9827), pp. 011003–011003–13.

👥 Conference Proceedings

- **Soria Z, Nicolás F** et al. (2018). "The Function-Human Error Design Method (FHEDM)". in: *ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. Quebec City, Quebec, Canada (Aug. 2018).
- **Soria Z, Nicolás** and Irem Y. Tumer (2017). "A Survey: Towards Understanding Emergent Behavior in Complex Engineered Systems". In: *ASME 2017 International Design Engineering Technical Conferences ASME IDETC/CIE 2017*. 58219. Cleveland, OH, USA (Aug. 2017).
- **Soria, Nicolás** et al. (2016). "Design of Complex Engineering Systems Using Multiagent Coordination". In: *ASME 2016 International Design Engineering Technical Conferences ASME IDETC/CIE 2016*. Charlotte, NC, USA (Aug. 2016).

AWARDS

- 🏆 **Global Beavers Team Award**
Nominated, 2018
- 🏆 **Mechanical Engineering Fellowship**
College of Engineering, 2014 – 2016
- 🏆 **Engineering Scholarship**
USFQ, 2004 – 2010

ASSOCIATIONS

- American Society of Mechanical Engineers ASME International
- Leadership Academy Oregon State University
- Society of Hispanic Professional Engineers SHPE

LANGUAGES

English
Spanish
Italian



INTERESTS

Team sports: soccer, basketball, group training

Individual sports: surfing, swimming

Outdoors activities: hiking, camping

Indoors activities: puzzles, board-games

I love live concerts, and dancing Latin rhythms.

REFEREES

Prof. Irem Y. Tumer

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Prof. Rob Stone

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