

Carlos Felipe **Alcala Perez**

Milwaukee, WI. | ☎ (+1) 414-426-6814 | ✉ alcala21@gmail.com | 🏠 www.alcala21.org | 📷 [alcala21](#) | 🌐 [alcala21](#) | 🎓 Carlos F. Alcala

Data Scientist

Summary

Accomplished Data Scientist with extensive experience developing and implementing data-driven and machine learning solutions in the Building Efficiency and Chemical industries. Highly skilled in data gathering, transformation and visualization, and algorithm analysis, development and deployment. Award winning scholar with multiple patents and research articles.

Expertise

- Multivariate Statistical Analysis
- Machine Learning
- Mathematical Analysis
- Data Analytics and Visualization
- Application Development
- Research and Development

Experience

Johnson Controls

Oct. 2011 - Jan. 2020

PRINCIPAL RESEARCH ENGINEER

Milwaukee, WI

Dec. 2017 - Jan. 2020

- Utilized advanced optimization, machine learning and data analytics methods to improve the efficiency of heating, ventilation and air conditioning (HVAC) systems.
- Key role in the transfer of newly developed technology into products and applications.
- Multiple patents granted.

SENIOR RESEARCH ENGINEER

Milwaukee, WI

May 2015 - Dec. 2017

- Developed methods for monitoring the performance of PID controllers, to detect steady state operation of HVAC equipment, and reduce energy consumption in wireless thermostats while keeping acceptable comfort standards. Applied advanced mathematical tools to develop these methods, as well as artificial intelligence, machine learning and traditional statistical methods.

SENIOR RESEARCH ENGINEER

Mexico City, Mexico

Jan. 2013 - May 2015

- Developed data-driven methods for fault detection and diagnosis in connected chillers.

SENIOR RESEARCH ENGINEER

Milwaukee, WI

Oct. 2011 - Jan. 2013

- Developed a method for adaptive sampling of PID controllers.

Internship Experience

The Dow Chemical Company

Freeport, TX

May 2010 - Aug. 2010

SUMMER RESEARCH INTERN

- Developed an Excel application for multivariate statistical monitoring of continuous and batch processes.

Capstone Technology

Seattle, WA

2006 - 2009

SUMMER ENGINEERING INTERN

May. 2009 - Aug. 2009

- Developed a multivariate image analysis application to monitor combustion efficiency in furnaces.

SUMMER ENGINEERING INTERN

May. 2007 - Aug. 2007

- Developed a multivariate statistical application for statistical modeling and prediction in chemical processes.

SUMMER ENGINEERING INTERN

May. 2006 - Aug. 2006

- Developed a multivariate statistical application for detection and diagnosis of sensor and process faults.

- Developed a multivariate statistical application for monitoring the operation of a semiconductor manufacturing process.

Education

Doctor of Philosophy in Chemical Engineering

Los Angeles, CA

Aug. 2007 - Aug. 2011

UNIVERSITY OF SOUTHERN CALIFORNIA

- Awarded a Roberto Rocca Fellowship.

Master of Science in Chemical Engineering

Austin, TX

Aug. 2005 - May 2007

THE UNIVERSITY OF TEXAS AT AUSTIN

- Fulbright Scholarship Recipient.

Bachelor of Science in Chemical Engineering, summa cum laude

Ciudad Madero, Mexico

Aug. 1999 - Dec. 2003

INSTITUTO TECNOLÓGICO DE CIUDAD MADERO

Skills

Programming R, Python, SQL, Matlab, VBA, C#

Markup \LaTeX , Markdown, RMarkdown

Frameworks/Libraries PyTorch, Tensorflow, numpy, pandas, dplyr, ggplot2, tidyverse

Applications Simulink, Dymola, RStudio, Docker, Git, Github, VS Code, Sublime Text, Office 365

Languages English, Spanish (native)

Certifications

Computational Thinking using Python

MIT

June, 2020

EDX

Credential ID: d3560c0c0c2541b1a5a38ca2fd6ebd08

Statistics with R

Duke University

Oct. 29, 2018

COURSERA

Credential ID: UWG3PS5EXMBJ

Machine Learning

University of Washington

Feb. 1, 2017

COURSERA

Credential ID: 2VHFDHW5GUK6

Data Science

Johns Hopkins University

Apr. 20, 2016

COURSERA

Credential ID: W9DB45S3CGDZ

Publications

Patents

Newton-based extremum-seeking control system

Timothy I Salsbury, Kirk H Drees, John M House, Carlos F. Alcala Perez

US Patent 10,824,127, 2020

System and method for output compensation in flow sensors using pulse width modulation

Carlos F. Alcala Perez, Kirk H Drees, Timothy I Salsbury

US Patent 10,558,227, 2020

Control system with dimension reduction for multivariable optimization

Timothy I Salsbury, Carlos F. Alcala Perez, John M House

US Patent 10,558,177, 2020

Building management system with voting-based fault detection and diagnostics

Carlos F. Alcala Perez

US Patent 10,747,187, 2020

Thermostat with efficient wireless data transmission

Timothy I Salsbury, Carlos F. Alcala Perez, Homero L Noboa

US Patent 10,739,028, 2020

Building management system with predictive diagnostics

Samuel F Hamilton, Carlos F. Alcala Perez

US Patent 10,700,942, 2020

Control system with asynchronous wireless data transmission

Carlos F. Alcala Perez, Kirk H. Drees

US Patent 10,333,810, 2019

Control system with response time estimation and automatic operating parameter adjustment

Carlos F. Alcala Perez, Timothy I. Salsbury

US Patent 10,324,424, 2019

Control system with response time estimation

Carlos F. Alcala Perez, Timothy I. Salsbury

US Patent 10,317,856, 2019

Building climate control system with decoupler for independent control of interacting feedback loops

Timothy I. Salsbury, Carlos F. Alcala Perez, John M. House, Christopher R. Amundson

US Patent 10,253,997, 2019

Building control system with decoupler for independent control of interacting feedback loops

Timothy I Salsbury, Carlos F Alcala Perez, John M House, Christopher R Amundson

US Patent 10,253,997, 2019

Feedback control system with normalized performance indices for setpoint alarming

Timothy I. Salsbury, Carlos F. Alcala Perez, Michael J. Ajax

US Patent 10,197,977, 2019

Systems and methods for steady state detection

Carlos F. Alcala Perez

US Patent 10,495,334, 2019

Normalized indices for feedback control loops

Timothy I. Salsbury, Carlos F. Alcala Perez

US Patent 9,920,943, 2018

Systems and methods for adaptive sampling rate adjustment

Carlos F. Alcala Perez, Timothy I. Salsbury

US Patent 9,395,708, 2016