ALEJANDRO MORALES

BIOLOGY, COMPUTER SCIENCE, ESG, MATH

alex@moralestapia.com
Toronto, Canada

EDUCATION

Computer Science
PhD Graduate Student
2017 - 2020

KAUST, Saudi Arabia
High Performance Computing and Visualization
C/C++, HPC and GPU (BLAS, CUDA, MPI), Math (Geometry, Linear Algebra), Graphics (GLSL, OpenGL, WebGL), Python (TensorFlow), Javascript (node.js, v8)

Integrative Biology
Master of Science
2014 - 2016

IPN, México
Computational Modeling and Physical Simulation of Plant Development
Biology, C/C++, Backend (AWS, Docker), Math (Linear Algebra, Statistics), Graphics (WebGL), Javascript (node.js, v8), Julia, Python, R

Genomic Sciences
Bachelor of Science
2005 - 2009

UNAM, México
Analysis and Visualization of Large Scale Genomic Data
Backend (AWS, Sun Grid Engine), C/C++, Java (2D Graphics, Hibernate, P5) Javascript (CSS/HTML, node.js), R

Computer Science
Technical Degree
2001 - 2005

CETI, México
Technical School in Computer Science and Electical Engineering
Automation, Control Theory, Hardware Design and Programming (MCUs, PLCs), Math (Calculus, Geometry, Linear Algebra), Networking, Software Engineering

INDUSTRY EXPERIENCE

Staff Backend Engineer
2025 - Present

Grey Matter Neurosciences, Canada
Engineered an auditable, high-trust backend for clinical imaging data.
Backend (NestJS), Medical Imaging (DICOM, NIfTI), node.js, Python, postgreSQL

Research Associate
2024 - 2025

RNAlab, University of Toronto, Canada
Petabase-scale Genomic Data Analysis and Visualization
Backend (AWS), C/C++, CUDA, node.js, Python, postgreSQL (postGIS), WebGL

Senior Backend Engineer
2022 - 2024

Web1on1 (CitNOW Group), Europe (Remote)
Scaling and maintaining the largest automotive messaging platform in Europe
Backend (GCP, node.js), Devops (Ansible, Docker, kubernetes, Terraform)

Co-Founder and CTO
2021 - 2022

Carbon Record / Fondo de Carbono, México
Software Architecture and Devops for a Carbon Footprint MRV SaaS
Backend (AWS, Cloudflare, GCP, node.js), Frontend (CSS/HTML/JS)
Devops (Ansible, Docker, Terraform)

Engineering Lead
2020

krrrunch, México
Digital media firm devlivering technical solutions to leading national brands
Backend (AWS, GCP, PHP, node.js) Frontend (CSS/HTML/JS)

Co-Founder and CTO
2011 - 2012

White Horse, México
First of its kind iPad App & Website for a Digital Publication with 60k subscribers
Apps (Adobe AIR, Apache Cordova, Android SDK, iOS), Backend (AWS, node.js), Frontend (CSS/HTML/JS, Flash)

Senior Network Engineer
2009 - 2012

GDLIcanet, México
Management and strategic planning for one of the largest ISPs in the region
Hardware (Routers, UPS, Wireless APs), Infrastructure (LinuxHA, LVM, RAID, Xen), Monitoring (AWS, Ganglia), Networking

Software Engineer
2003 - 2004

REFCO, US (Remote)
Internal Applications for one of the largest FOREX Trading Platforms at the time
ActiveX, ASP.NET, C/C++, .NET Framework, Networking (SOAP), Visual Basic

RESEARCH

Scientific Visualization
2017 - 2020
Graduate Studies

High Performance Visualization Group, KAUST, Saudi Arabia
Prof. Markus Hadwiger.

Category Theory
2019
Conference & Workshop

Computer Science Department, University of Oxford, UK
Applied Category Theory 2019 Conference & Adjoint School.

Visualization
2018
Conference

IEEE Visualization 2018, Berlin, Germany
Interactive exploration of Physically-Observable Objective Vortices in Unsteady 2D Flow

Developmental Biology
2015 - 2017
M.Sc. Research Work

Molecular Complexity and Development Group, LANGEBIO, México
Prof. Alfredo Cruz. M.Sc. Thesis Advisor.

Bioinformatics
2016
Technical Writer

Exoscale AG, Switzerland
"Bioinformatics on the Cloud"
Tutorial Series.

Bioinformatics
2016
Workshop

Software Carpentry, LANGEBIO, México
Organizer and Lecturer.

Biochemistry
2015
Conference

International Congress of Biochemistry, Queretaro, México
Modeling Auxin Dynamics during early *Arabidopsis thaliana* Embryogenesis.

Developmental Biology
2015
Research Stay

Division of Biology and Biological Engineering, Caltech, US
Prof. Elliot Meyerowitz.

Developmental Biology
2015
Conference

Academic Days 2015, LANGEBIO, México
Modeling Auxin Dynamics during early *Arabidopsis thaliana* Embryogenesis.

Biochemistry
2014
Conference

National Congress of Biochemistry, Guadalajara, México
A Common Framework for the study of Structure in Biology.

Computer Science
2014
Directed Research

Google Summer of Code, México
Expanding WebWork with Quantitative Biology PDEs

Developmental Biology
2014
Conference

Academic Days 2014, México
A Deterministic Software Stack designed to recreate Nature.

Plant Development
2014
Research Internship

Apomixis and Reproductive Development Group, LANGEBIO, México
Prof. Jean Phillipe Vielle Calzada.

Plant Genetics
2014
Research Internship

Maize Genetics and Genomics Group, LANGEBIO, México
Prof. Ruairidh Sawers.

Plant Genetics
2014
Research Internship

Maize Genetics and Genomics Group, LANGEBIO, México
Prof. Ruairidh Sawers.

RESEARCH (cont.)

Genetic Engineering
2014
Research Internship

Metabolic Engineering of Plants Group, LANGEBIO, México
Prof. Luis Herrera Estrella.

Biochemistry
2014
Research Internship

Structural Biochemistry Group, LANGEBIO, México
Prof. Luis Gabriel Brieba de Castro.

PUBLICATIONS

Logan: Planetary-Scale Genome Assembly Surveys Life's Diversity.
R. Chikhi, T. Lemane, R. Loll-Krippleber, M. Montoliu-Nerin, B. Raffestin, A. Pedro Camargo, C. J. Miller, M. Bernabe Fiamenghi, D. Paiva Agustinho, S. Majidian, G. Autric, M. Hugues, J. Lee, R. Faure, K. D. Curry, J. A. Moura de Sousa, E. P. C. Rocha, D. Koslicki, P. Medvedev, P. Gupta, J. Shen, ***A. Morales-Tapia****, K. Sihuta, P. J. Roy, G. W. Brown, R. C. Edgar, A. Korobeynikov, M. Steinegger, C. A. Lareau, P. Peterlongo, A. Babaian*
Under Review, 2025. doi:10.1101/2024.07.30.605881

A parasite odyssey: An RNA virus concealed in *Toxoplasma gondii*.
P. Gupta, A. Hiller, J. Chowdhury, D. Lim, D. Yee Lim, J. Saeij, A. Babaian, F. Rodriguez, L. Pereira, ***A. Morales-Tapia***
Virus Evolution, 2024. doi:10.1093/ve/veae040

Shape analysis of 3D nanoscale reconstructions of brain cell nuclear envelopes by implicit and explicit parametric representations.
M. Agus, M. Veloz, J. Garnica, E. Gobetti, H. Lehväslaiho, ***A. Morales-Tapia****, P. Magistretti, M. Hadwiger, C. Cali*
Computers & Graphics, 2019. doi:10.1016/j.cagx.2019.100004

Computational Modeling of Auxin: A Foundation for Plant Engineering.
A. Morales-Tapia*, A. Cruz*
Frontiers in Plant Science, 2016. doi:10.3389/fpls.2016.01881

LANGUAGES

English
TOEFL IBT 112/120
(96th percentile)

Spanish
Native Speaker