Johnny Godoy

Curriculum Vitae

PERSONAL INFORMATION

Nationality	Ecuadorian
E-mail	johnny.godoy@ing.uchile.cl
GitHub	https://github.com/johnny-godoy
LinkedIn	https://www.linkedin.com/in/johnny-godoy-4ba146200/

PRESENTATION

I'm interested in computational and mathematical modeling of new and challenging problems that require an interdisciplinary approach. My primary focus is interpretability in Data Science.

EDUCATION

Minors in Computing 2018-2022

Universidad de Chile

I finished 3 minors from the Computer Science Department: Computer Science, Software Development for Scientific and Engineering Applications, and Scientific Computing; this last one jointly with the Physics Department.

Mathematical Engineering professional degree 2018-

Universidad de Chile

Includes a B.Sc. in Engineering Mathematics. Contains equivalent coursework to an M.Sc.Eng in Applied Mathematics. I've been awarded academic distinction every year. Thesis student.

M.Sc. in Data Science 2021-

Universidad de Chile

Thesis student along with Mathematical Engineering.

EXPERIENCE

Teaching and grading assistant August 2020-January 2022

Universidad de Chile

In courses of the Mathematical Engineering and Computer Science department. This includes correcting evaluations, delivering feedback and teaching.

- Teaching assistant for Introduction to Programming (Python)
- Tutor for Introduction to Algebra, Introduction to Calculus, Single Variable Calculus and Ordinary Differential Equations
- Grading assistant for Introduction to Data Mining (R/Python). 2 instances.
- Grading assistant Introduction to Algebra and Single Variable Calculus

Internship January 2021

Agency for Sustainability and Climate Change

Helping with the new Clean Production Agreement management platform. Statistical analysis for outlier removal with Python. Knowledge and practical application of the Sustainable Development Goals.

Satellite image research August 2021 - December 2021

Center for Mathematical Modeling

As part of the seminar "Mathematical modelling at work": Development of a radar satellite imaging based methodology for peatland monitoring.

Internship January 2022

Center for Mathematical Modeling

Methodological triangulation of no-show patient prediction study (with ML models) with qualitative data obtained in interviews, within the context of the Fondef ID19I10271 project.

Data Science development August 2022 - December 2022

Fintual

As part of the course "Data Science Project" from my M.Sc. in Data Science: We created a black box user deposit regression model with post-hoc interpreters.

Research Intern January 2023 - April 2023

Inria Grenoble-Rhône-Alpes

Research internship in France. Numerical optimization for computational mechanics of rock flows. I proved a new result on the singularity of the Jacobian for a second order optimization problem. This result gives theoretical justification for a regularization method. I implemented several strategies for selecting the regularization parameter in the software Siconos, and analyzed their performance.

SKILLS

Languages	Native Spanish, C1 English certified by TOEFL ITP
Software	MATLAB, LaTeX, Excel, Maple, Git, Godot, Jupyter
Programming	Python, C, Java, Julia, R, GDScript, Kotlin
Databases	MariaDB, MySQL, MongoDB
Libraries	NumPy, SciPy, pandas, Scikit-learn, matplotlib, plotly

PROJECTS

Personal projects:

- Developing free open-source Python software for easy handling of BOCOP solutions of optimal control problems. [Repositorio]
- Cofounder for the Association of Ethics in Data an Artificial Intelligence (AEDIA in spanish) of the University of Chile. [Website]
- Writing wiki style notes for my university classes with TiddlyRoam. [Repository]

Related to coursework:

- Analysis of *Fairness* & *Bias* in criminal recidivism classification algorithm.
- Interpretable *few-shot* image classification with OpenCV. [Code] [Wiki]
- Mathematical modeling of vaccination and isolation policies for COVID-19 with optimal control theory.
- Shapley Value approximation with Monte Carlo simulations and Stochastic Gradient Descent for Machine Learning Interpretability.
- Developing an Android videogame for developing algorithmic thinking in children, by challenging them to solve graph problems. [Repository]
- Comparison of Monte Carlo methods with direct numerical methods for solving of PDE's: We developed an algorithm which improves upon the ones that we could find in literature. We intend to publish these results soon. [Repository]
- Developing a simplified clone of Final Fantasy's combat system in Kotlin, using Test Driven Development, aligned to the SOLID principles. [Repository]