

# Mario A. Ponce-Pacheco

## Hydrology – Data Science – Software development

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## EXPERIENCE

### [Technische Universiteit Delft – Faculty of Civil Engineering and Geosciences](#)

April 2024 – September 2024

*Project Manager / Teaching Assistant*

I collaborated in organizing the faculty's biggest course: [Modelling, Uncertainty, and Data for Engineers \(MUDE\)](#). 300 students take it, and around 30 lecturers and Teaching assistants are involved.

**Supervisor:** [Robert Lanzafame](#) ([r.c.lanzafame@tudelft.nl](mailto:r.c.lanzafame@tudelft.nl))

Technologies: Python, Django

### [Technische Universiteit Delft – Water Management Department](#)

Jan 2023 – March 2024

*Researcher / BackEnd developer*

I developed the bac-kend of [MAKARA](#), an app implementing a socio-hydrological model in Maharashtra, India. Developed a robust API for front-end communication and automated climatic data processing.

**Supervisor:** [Saket Pande](#) ([s.pande@tudelft.nl](mailto:s.pande@tudelft.nl))

Technologies: Python, Django REST, Linux

### [BairesDev](#)

Jun 2021 – Aug 2022

*Python Engineer*

Responsible for implementing Machine Learning algorithms to improve the performance of a cooking robot for the client [Miso Robotics](#).

Technologies: Python, C++, ROS, pytest, Linux

### [Tata Consultancy Services](#)

Sep 2020 – Jun 2021

*Software Engineer*

Responsible for giving support in Linux systems to financial projects. I got also training in AWS technologies.

Technologies: Python, AWS, Linux

### [Soluciones en Ingeniería y Tecnologías del Agua](#)

Nov 2018 – Aug 2020

*Hydrology and Hydroinformatics Consultant*

Oversaw hydrological modelling, and flood simulations, and devised mitigation solutions for a Protected Natural Area.

Technologies: Python, IoT, R, Raspberry, Arduino, QGIS, HEC-RAS, Linux.

### [Deltares](#)

May 2018 – Sep 2018

*Intern*

Managed the processing of raster files and spatial time series, with a focus on down/up-scaling; which now it's part of a commercial toolbox. Conducted runoff simulations for European basins, considering diverse climate change scenarios using Wflow.

**Supervisor:** [Albrecht Weerts](#) ([albrecht.weerts@deltares.nl](mailto:albrecht.weerts@deltares.nl))

Technologies: Python, Wflow, Linux

### **Irrigation engineer**

Aug 2011 – Apr 2016

Throughout these years, I contributed to various small companies, taking versatile roles: Designing irrigation systems, GIS, soil conservation infrastructure, and conducting hydrological model simulations.

Technologies: GIS, R, python

## University of Arizona

Jan 2010 – Mar 2010

### *Intern*

I collaborated with the university's controlled environment agriculture centre.

**Supervisor:** [Murat Kacira](#) ([mkacira@cals.arizona.edu](mailto:mkacira@cals.arizona.edu))

Technologies: CRBasic

## **Independent Project**

Jul 2015 – Sep 2015

### **Web Designer**

I worked as a designer of web pages.

Technologies: HTML5, CSS3, WordPress, Joomla

## **EDUCATION**

### Wageningen University & Research

*Master's Degree in Climate Studies, 2016-2018*

*Hydrology and Quantitative Water Management Group. **Minor:** Dynamic Systems Modelling*

**Thesis:** Feasibility of the application of the Lattice Boltzmann Method to resolve flow in a sharp river bend

**Supervisor:** [Ton Hoitink](#) ([ton.hoitink@wur.nl](mailto:ton.hoitink@wur.nl)), **Paul Torfs**

**Description:** I studied the feasibility of implementing the Lattice Boltzmann Method in the simulation of natural flows, identifying the limitations of implementation in large-scale problems.

### Universidad Nacional Autónoma de México, IIMAS-UNAM

*Postgraduate Degree in Applied Statistics, 2014- 2015*

### Universidad Autónoma Chapingo, UACH

*Bachelor's Degree in Irrigation Engineering, 2006-2010*

**Thesis:** Design of irrigation networks using Differential Evolution algorithms and Artificial Bee Colony

**Supervisor:** [Irineo López Cruz](#) ([ilopez@correo.chapingo.mx](mailto:ilopez@correo.chapingo.mx))

**Description:** I studied the usage algorithms of DE and ABC in minimising the cost of the design of pressurised irrigation systems.

## **PUBLICATIONS** [\[Abstracts\]](#)

- **Ponce Pacheco, M.A.**, Adla, S., Guntha, R., Aravindakshan, A., Presannakumar, M., Tyagi, A., Nagi, A., Pastore, P., & Pande, S. (In review). Makara: A tool for cotton farmers to evaluate risk to income. Smart Agricultural Technology. Manuscript under review.
- Adla, S., Aravindakshan, A., Tyagi, A., Guntha, R., **Ponce Pacheco, M.A.**, Nagi, A., Pastore, P. & Pande, S. (in review). Participatory development of mobile agricultural advisory driven by behavioural determinants of adoption. Journal of Environmental Management. Manuscript under review.

## **LANGUAGES**

- **Spanish:** Native
- **English:** Professional

## **TECHNICAL SKILLS**

- **Languages:** Python (advanced), R (advanced), C++ (intermediate), MATLAB (intermediate), Julia (basic)
- **Web design:** HTML/CSS
- **Frameworks:** Django, Django – REST, ROS
- **OS:** Linux, Windows
- **Databases:** MySQL, PostgreSQL
- **GIS:** QGIS, ArcGIS, RASTER, SHP, NetCDF
- **Cloud:** AWS
- **Agile:** SCRUM