

# Gabe Montes de Oca

A Computer Programmer with a PhD in Math

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## PROJECTS

### **Up in the Tower, Game** — C++ & SDL

September 2020 - present

2D RPG using original game base. Players can play as knight freeing royal hostage, or as hostage and free themselves. Features flexible code base, character customization, multiple levels, and save/load options.

### **odd-p-inv, Computational Topology Tool** — Python

February 2020 - June 2020

Research mathematics toolkit for computing original homological invariants and associated values.

### **TestMaker, Randomized Exam Generator** — Python & LaTeX

Summer 2017

Tool to produce randomized, QR-code-distinguished versions of math exams varying values and choices in word problem, multiple choice, and true/false questions. Generates corresponding answer key.

## EDUCATION

### **University of Oregon, Eugene, OR** — Ph.D. in Mathematics

September 2020

4.00 GPA in Computer Science courses. Relevant courses: Computer Organization, Data Structures, Algorithms, Database Processing, C/C++ and Unix.

Theory of Probability, Harmonic Analysis, Mean Curvature Flow, Yang-Mills Theory, Theoretic Neuroscience.

Research in: general relativity, geometric topology.

### **Lewis & Clark College, Portland, OR** — B.A. in Mathematics

May 2011

Relevant Courses: Numerical Analysis (mathematical computer algorithms).

## EXPERIENCE

### **Graduate Employee, University of Oregon**

September 2012 - September 2020

Instructor - Sole Instructor for 21 math courses from First-Year to Senior level for majors and non-majors. TA for 4 courses up to Master's level.

Researcher - Research in low-dimensional topology and mathematical relativity. Programmed research tools, communicated results in written and oral form, attended conferences, contributed to work groups.

Administrative - Managed files and correspondence with up to 144 students per course, prepared class materials, wrote and graded tests and homework, coordinated logistics with administration.

## SKILLS

Python (4+ yr.):  
NumPy, SciPy, Pandas

C (4yrs.) / C++ (2 yrs.)

SDL

BASH/vim

HTML/CSS

## INVOLVEMENT

### **Advanced Mathematics Reading Mentor**

AWM-URP mentor for 4 undergraduates in topics including mathematics of computer graphics, spinors, and complex analysis.

**Pi Mu Epsilon** National Mathematics Honors Society, Oregon Eta Charter Member. Presented two research projects at PCUMC and MAA MathFest.

### **Campus Living Advisory Board**

Co-wrote and edited RA manual; served on Campus Living hiring board; organized catered awards dinners; conducted internal affairs research and wrote research reports.

## LANGUAGES

Native English speaker

Fluent Spanish