POL GÓMEZ RIQUELME

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EDUCATION

The University of Chicago — **Chicago, IL**
B.S. in Computer Science and Mathematics — *Expected June 2020*

· **GPA** 3.8 **Awards & Scholarships** Dean's List 2016-2019, Odyssey Scholar
· **Relevant Coursework** *Current* — Cryptography, Operating Systems *Previous* — Algorithms, Deep Learning, Computer Systems, Multivariate Statistics, Numerical Analysis, Linear and Abstract Algebra, Analysis in R^n

EXPERIENCE

SAND Lab at The University of Chicago — **Chicago, IL**
Researcher — *May 2019 – Present*
· Designed and trained a deep learning model to reverse-propagate WiFi signal maps in PyTorch
· Developed proof-of-concept adversarial attacks on an LSTM network used for anomaly detection

Mathematics REU at The University of Chicago — **Chicago, IL**
Researcher — *June 2018 – August 2018*
· Wrote a 30-page graduate-level introduction to algebraic number theory
· Provided periodic progress reports and summarized project results for a non-mathematical audience

Autonomous University of Barcelona (UAB) — **Bellaterra, Spain**
Researcher — *June 2017 – September 2017*
· Compiled novel results on the mathematical theory of polynomial functors
· Wrote a technical survey on the fundamental concepts of category theory and its applications

Institute of Photonic Sciences (ICFO) — **Castelldefels, Spain**
Research student — *July 2016*
· Implemented the Fast Fourier Transform image compression algorithm in C++ and MATLAB
· Created a set of C++ image processing tools allowing adjustments to brightness, contrast, color palette and sharpening

Research Science Institute (RSI) at MIT — **Boston, MA**
Research student — *July 2015 – August 2015*
· Proposed a mathematical conjecture on combinatorics and tested it with Python code (SageMath)
· Wrote technical paper on research results and presented it to an audience of 30+

Catalunya-La Pedrera foundation ("Joves i Ciència" program) — **Remote**
Project collaborator — *August 2014 – January 2015*
· Automated near-Earth object detection on a collection of ~500 telescope images with Python
· Used astronomical imaging software MaximDL to compute accurate differential photometric figures

PROJECTS

CHIP-8 System Emulator — *github.com/aszkid/chip8* — **January 2018**
· Wrote a fully-featured CHIP-8 emulator in Rust capable of running game ROMs
· Programmed a CPU emulator with configurable clock speed and graphics system through the SFML library

C++ Rendering Engine — *github.com/aszkid/milsim* — **November 2017 – January 2018**
· Designed an OpenGL rendering pipeline configurable through JSON files
· Implemented a double-frame game loop to allow lock-less synchronization between graphics and game logic threads

Machine Learning Research Project — *github.com/aszkid/fsia* — **December 2013 – June 2014**
· Received *National Youth Research Prize* (Generalitat de Catalunya)
· Programmed virtual self-driving car through Q-learning
· Implemented hand-written digit recognition through C++ FANN library neural networks

CLUBS AND EXTRACURRICULARS

UChicago Applied Math Club (UCAMC) — **Chicago, IL**
Vice President, ucamc.github.io — *August 2018 – Present*
· Co-organized weekly lectures on applied math given by professors at UChicago, regularly attended by ~30 students
· Designed and maintained club's website

SKILLS

Programming Languages	C, C++, Python, Rust, Javascript, SQL, R, MATLAB, LaTeX
Software & Tools	PyTorch and Tensorflow, GNU/Linux (`bash`, `gdb`), Visual Studio, `git`
Languages	Fluent English, Native Spanish and Catalan, Basic French and Russian