



# Nicolas Hug

*PhD Student in Machine Learning, programmer*

## Experience

2014-Now **Phd Student in Machine Learning**, at the *Research Institute in Computer Science of toulouse*, supervised by [Henri Prade](#), [Gilles Richard](#), and Mathieu Serrurier.

The goal of my PhD is to study the empirical behaviour of analogical classifiers (somewhat related to k-NN classifiers), and to exhibit some of their theoretical properties. My main publication so far was at ECAI 2016:

- o [Analogical Classifiers: A Theoretical Perspective](#)

2014 **Machine Learning Research Internship (6 months)**, *Intelligent Systems Lab*, University of Bristol, UK.

Development of a classifier for musical instrument sounds. The training set consists of single-note audio files, and the classifier must predict the instrument.

- o Cleaning and organization of the training data in a suitable database.
- o Signal processing: computation of CQT/FFT transforms.
- o Heavy usage of linear regression models with categorical variables, with multiple tweaks to comply with the musical nature of signals.

2013 **C developer internship (6 months)**, *Laboratory for Analysis and Architectures of Systems*.

Development of a prototype for an embedded automotive application on a Freescale PowerPC chip. The goal was to transfer binary files from a PC to an embedded chip so that the chip can dynamically run the binaries.

- o Design of a SPI link between a PC and the embedded chip.
- o Design of a file transfer protocol.
- o Dynamic integration and execution of the binary files by the embedded application.

## Open source projects

Recommender Systems During my free time I developed [Surprise](#), a Python package to build, evaluate and compare recommend systems. If you want to see how I code, this is definitely where you should go.

OS development In 2012, with three other students: design and development in C++ of a [graphical user interface](#) for a student Operative System. We developed everything, from the graphics drivers (VSA and VESA) to the end user applications, such as a terminal emulator, a file explorer, an image viewer and a drawing software.

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GitHub: [NicolasHug](#). 26 years old, fluent in French, English and Spanish.

1/2

## Programming skills

I am highly proficient in Python and C (see projects). I am very familiar with Python's scientific tools (Scikit-learn, Numpy, Pandas, Matplotlib) and with Cython (for optimization). I use Linux daily, and pay careful attention to code quality.

Other languages I am acquainted with are OCaml, Java, C++, Ada, Prolog and Php.

## Teaching commitments

During my PhD, I have gave (mostly practical) lessons in various CS topics (64 hours per year):

Under graduate    Concurrency and threads in C. Ocaml, Python and Ada basics. Also gave a few lectures on general AI.

Post graduate     Graph theory, linear programming and reinforcement learning.

## Education

2013-2014    **Master's Degree in Artificial Intelligence**, *Université Paul Sabatier*.  
Valedictorian (over ten students).

2008-2013    **Master's Degree in Computer Science engineering, specialized in critical embedded systems**, *Institut National des Sciences Appliquées of Toulouse (INSA)*.  
Last semester at the [Faculty of Engineering](#) of the University of Buenos Aires.

## More about me

When I'm not working on my PhD or on [Surprise](#), you may find me rock climbing or hiking, lost somewhere in the Pyrenees (French mountains)... But really, my taste for exercise is only a workaround for my true passion: food!