Javier García Barcos

Experience and Qualifications

Interests

- **Machine Learning**: Bayesian Optimization, Neural Networks, Graphical Models.
- **Game Development**: Gameplay, Artificial Intelligence, Game Engine.
- But also: Computer Graphics, Computer Vision, IoT and Robotics.

Education

2015–2017 **Master's Degree in Computer Engineering**, *Universidad de Zaragoza*, Spain.

Relevant Courses:

- Machine Learning for Big Data, Computer Graphics and Multimedia Environments
- High Performance Computing, Technologies for Distributed Applications
- Strategic Business Administration

2011–2015 **Bachelor's Degree in Computer Science**, *Universidad de Zaragoza*, Spain.

Relevant Courses:

- Advanced Algorithms, Compilers, Artificial Intelligence.
- Machine Learning, Computer Graphics, Robotics, Computer Vision.
- Software Verification and Validation, Software Engineering.

End-of-Degree Project

title *Bayesian Optimization applied into Fluid Dynamics problems*

supervisors Rubén Martínez Cantín

description Developed a framework to optimize long run-time fluid simulations with Bayesian Optimization, which allows faster black-box optimizations by reducing the number of evaluations. Used BayesOpt (C/C++ Bayesian Optimization library) and XFlow (CFD software).
Framework utility was showcased by the generation of physically correct wing shapes without no prior knowledge on aerodynamics.

Experience

2016–2017 (6 months) **Research Internship**, *Centro Universitario de la Defensa* , General Military Academy of Zaragoza (Spain).

Detailed:

- Technology Transfer project in collaboration with NextLimit (under NDA).
- Mantaining and Improving BayesOpt (C/C++ Bayesian Optimization Library).
- Bayesian Optimization and MCMC Researching.

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Languages

Spanish **Mother Tongue**

English **B2 Understanding | B1 Speaking | B1 Writing**

Personal Skills

Rugby Player **Good-Communicator, Analytical, Calm under pressure**
Former rugby player for about 4 years. As a Scrum-half player, I was in charge of directing the forwards (8 players) and making tactical decisions on the field.

Team Oriented **Flexible, Cooperative, Broad-Minded**
As a student I've been involved in multiple group projects composed of people with different cultural background, like foreign students, and with different technical knowledge. This requires to take into account each member's necessities, capabilities and personality to ensure a good result.

Curiousity Driven **Independent, Motivated, Fast-learner**
I'm always passionate about learning new things and technologies. It was that curiosity that drove me to taught myself how to program.

Relevant Work

2016–Present **SAFE**, *Simple C++ 2D engine built over SDL*.
- Started to improve my Modern C++ skills while adquiring Game Engine insights.
- Built with flexibility in mind: ECS architecture and Lua scripting support.

2014–Present **Collaborating with BayesOpt**, *Open Source Bayesian Optimization Library*.
- Written in C/C++ with interfaces to Python and Matlab.
- I've been helping BayesOpt's author with enhancing and mantaining library.

2016 **Realistic Camera Raytracer**, *Realistic camera effects into a 3D Raytracer*.
- Final project for Computer Graphics Course.
- Camera defects makes the rendered scene more realistic: Depth of field, lens scratches, lens dust, coded apertures and chromatic aberrations.
- OpenMP paralelization to speed things up.

2014–2015 **Unity Agents Project**, *AI agents prototype using Unity*.
- Focused on automatic generation of navigation structures, agent spatial reasoning and perception.
- Voronoi diagrams to represent pathways and Occupancy maps for beliveable search behaviours.

Computer skills

Programming Languages	C/C++, Python, Java, C#	Operating Systems	Linux, Windows, Android
Familiar with	Matlab, JavaScript, HTML/CSS	Source Control	Git, Mercurial, SVN
Game Development	SDL, Unity	Build Tools	CMake, gradle

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