# Vaios Papaspyros – Curriculum Vitae


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| **Date of Birth** | $28^{th}$ April 1994 | **Bitbucket** | https://bitbucket.org/bpapaspyros |
| **Nationality** | Greek | | |


## Experience

**May 2016 - Oct 2016** **Research intern at Inria Nancy Grand-Est, LARSEN/Resibots Team, Nancy, France**
*Internship Title: Intelligent Trial & Error with the iCub humanoid robot*

**Research Topic**: Robot damage recovery with safety constraints.
**Supervisor**: Jean-Baptiste Mouret.
**Funding**: ERC "ResiBots" Project.
**Related Publications**: "Safety-Aware Robot Damage Recovery Using Constrained Bayesian Optimization and Simulated Priors".

## Education

**Sep 2012 - Present** **Computer Engineering & Informatics Department, University of Patras Greece**
**Undergraduate Student**

CEID offers a 5 year undergraduate program which is a master equivalent (300 ECTS). During these five years is offered a wide variety of computer engineering and science courses, including lab hours and course projects concerning main problems of the computer science field. Main interests in the area of programming, AI & machine learning and algorithm design.

**Costeas-Gitonas School, Athens, Greece**
**July 2012** **High School | Final Grade: 19.2/20**

Became acquainted with the field of computer science, earning the International Certificate in IT skills (Cambridge) and ECDL core diplomas. Furthermore, I studied basic HTML and C programming as a part of the computer science course.

**2013 - Present** **Online Courses**
**Coursera, MIT Open Courseware, Stanford Center for Professional Development**

I have attended over 10 courses covering a wide range of topics such as Machine Learning, Software Engineering, Android Development, Parallel Programming, Linear Algebra, Computer Architecture, Data Structures, Digital Signal Processing, etc.

## Activities

**Oct 2012 - Feb 2014** **Robotics Club (Polymechanon Team), University of Patras, Greece**
*Member*

Worked on developing a graphical user interface using ROS for the project "Polymechanon". Developed more programming skills in accordance with guidelines followed by the community. Gained a lot of useful knowledge about version control systems and code documentation. Furthermore, I studied the basics in the theory of robotics, including basic forward and inverse kinematics.

## Publications

### Peer-Reviewed Workshops

**Safety-Aware Robot Damage Recovery Using Constrained Bayesian Optimization and Simulated Priors**, *Vaios Papaspyros, Konstantinos Chatzilygeroudis, Vassilis Vassiliades, Jean-Baptiste Mouret, BayesOpt 2016: Proceedings of the International Workshop on "Bayesian Optimization" at NIPS 2016 | Supplementary Video.*

The recently introduced Intelligent Trial-and-Error (IT&E) algorithm showed that robots can adapt to damage in a matter of a few trials. The success of this algorithm relies on two components: prior knowledge acquired through simulation with an intact robot, and Bayesian optimization (BO) that operates on-line, on the damaged robot. While IT&E leads to fast damage recovery, it does not incorporate any safety constraints that prevent the robot from attempting harmful behaviors. In this work, we address this limitation by replacing the BO component with a constrained BO procedure. We evaluate our approach on a simulated damaged humanoid robot that needs to crawl as fast as possible, while performing as few unsafe trials as possible. We compare our new "safety-aware IT&E" algorithm to IT&E and a multi-objective version of IT&E in which the safety constraints are dealt as separate objectives. Our results show that our algorithm outperforms the other approaches, both in crawling speed within the safe regions and number of unsafe trials.

## Projects

### Programming

- **C/C++** -
  - **Co-author to robot_dart**, a policy based, highly templated C++11 generic robotics simulator ideal for evolutionary computation.
  - **Contributor to limbo**, a highly templated C++11 Bayesian optimization framework.
  - **University assignments** requiring extensive use of the ***Boost***, ***LEDA***, ***OpenMP***, ***CUDA*** and ***OpenCL*** C/C++-APIs. Furhermore, assignments focusing on C++ object oriented design & programming, ***OpenGL*** graphics, data structures, sorting algorithms, HTTP request parser, posix threads, TCP/IP server-client implementations.

- **Python** - Implementations including the Aho-Corasick algorithm and genetic programming problems. Plenty of experience with matplotlib, numpy and the waf build system.

- **Java/Android** - University assignments including swing and JavaFX development. Android applications including micro controller communication.

- **SQL & JDBC** - University assignments combining SQL database design & implementation as well as GUI support through JavaFX and JDBC (for SQL database handling).

- **Matlab/Octave** - University assignments for the Scientific Computation and Digital Telecomunications (quantizer, huffman code, PCM, FSK, PSK implementations) courses. Furthermore, assignments for the online course Machine Learning (Coursera).

- **HTML/CSS/PHP/Javascript** - Simple mailing list manager (with a simple interface) using the campaign monitor php API.

### Machine Learning and Robotics

- Interested in advancing in this field.
- Research intern at Inria - Intelligent Trial & Error with the iCub humanoid robot.
- Worked on developing a GUI for the "Polymechanon" project.

## Competitions

- **IEEExtreme9.0** (Oct 2015) Team *"Tokyooo"* | Ranked top 25% worldwide.

## Skills

**Advanced**: C/C++(11), Python, Java, Matlab/Octave, LaTeX, bash scripting, Object Oriented Design & Programming, Policy-based design

**Intermediate**: Robot Operating System (ROS), OpenMP, CUDA, OpenGL, MySQL & Sqlite, HTML 5, CSS, PHP, Javascript

## Certificates

- English - Proficiency Level (C2), Cambridge Certificate
- French - DELF (B2), International Centre for French Studies

- European Computer Driving Licence (ECDL)
- International Certificate in IT Skills

## Languages

Greek: Native
English: Fluent - Professional working proficiency
French: Limited working proficiency

## Interests

- Machine Learning
- Programming
- Basketball
- Artificial Intelligence
- Robotics
- Music/Guitar