

**Weekly PULSE Issue**

Interview with John  
Scaramuzzo - President of  
SMART Storage Systems

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## Featured Engineer

**Gianluca Antonelli**

Gianluca Antonelli - Electrical Engineering Professor

**How did you get into electronics/ engineering and when did you start?**

In the beginning of the 80's my father brought home a Commodore 64. I started playing with it and programming in basic, I remember a simple graphic program in which what was supposed to be a helicopter, drawn pixel by pixel by me, moved around the screen. I was 12. In my teens, I left any kind of engineering-like activity and enrolled into Electronics Engineering at the "Universita' di Napoli".

**What are your favorite software tools that you use?**

I'm a Linux user, in a sense, the concept of open source mainly gravitating around the Linux community is my favorite software "tool". In addition, I use Latex to write documents and prepare the teaching material, Scilab and Matlab to make numerical computations or plot the data.

**What is the hardest/trickiest bug you have ever fixed?**

Not really a bug, but for sure the hardest for me. We were writing the dynamic model of an industrial manipulator with an uncommon kinematics and the property of linearity in the parameters did not showed up by our tests. After several days of debug and rewriting of the equations we found out the "bug". There was a graphic plot with several lines that appeared to be confused, when they all nicely superimposed we had the proof that the bug was over.

**What is on your bookshelf?**

The books of Siciliano-Sciavicco on robotics, the books of Chiaverini-Caccavale-Villani-Sciavicco, Fossen, Kailath and Khalil. I'm also proud of the Knuth book on TeX in addition to Strogatz, Bennett and, well, also my monograph on underwater manipulation.

**Do you have any tricks up your sleeve?**

My dog, Ettore. I walk it on the morning and in the evening and I have the time to think about equations, scheduling, next day classes with the due calm and without a screen in front of me...

**What has been your favorite project?**

It was an European project with a terrible acronym: Co3AUVs (<http://www.Co3-AUVs.eu>) dealing with coordinated control of marine robots. I had the honor to be its scientific coordinator, coordinating with the people of an Italian inter-university center (ISME, <http://www.isme.unige.it>) and working with Portuguese and German partners. Very exciting from the scientific perspective and pleasant as working environment.

**Do you have any noteworthy engineering experiences?**

Well, recently I had the honor to be voted as chair for the IEEE Robotics & Automation Society Italian chapter (<http://www.i-ras.unicas.it>). I pretend it is an indirect proof of my commitment to the research community in robotics even if maybe I have been elected only because I'm organizing the annual social dinner...

**Do you have an experiential stories you would like to share?**

I was a fresh engineer, I was in Belgium working on a dynamic controller for industrial manipulator together with Wen-Hong Zhu. He asked me to assign a still desired movement to the robot and then, with the motor on, he hugged the robot and started "dancing" with it by moving the various links and "feeling" with his hand their movement back to the rest position. After 10-15 seconds of this apparently crazy behavior he came back at the desk close to me and gave the correct gain corrections.

I did use this "technique" a few years later in the tuning of the controller parameters for ODIN. Incredibly, it worked...

**What are you currently working on?**

I'm currently involved in two very exciting projects, one European, named ARCAS (<http://www.arcas-project.eu>) led by Annibal Ollero and the other national, named MARIS led by Pino Casalino. In both, my role is the study of coordinated control of vehicles (aerial and marine respectively) equipped with manipulators. I'm also writing a proposal on control of heterogeneous robots dealing with coordination of one mobile manipulator and several micro aerial vehicles, let us cross the fingers.

**What direction do you see your business heading in the next few years?**

For "business" I mean here "academic research". Having made this clarification the answer is... "I do not know." There is a nice sentence assigned to several persons, among them the physician Bohr, which says, "Forecasting is difficult, especially concerning the future."

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