



THE PHD SECRET N.3 AND FRANCESCO TOPPUTO

by Enrico De Angelis

Hugh Kearns (@ithinkwellHugh), a recognised educator who lectures around the world about post-grad training (and sometimes makes witty jokes about), prepared a series of “PhD-tips” called “the 7 PhD Secrets”. With his 3rd PhD Secret, he invites PhD Candidates to dream high but ... not too much: «be realistic. It's not a Nobel Prize. You want to discover something awesome, and you might. But you do not have to win the Nobel Prize to get a PhD».

Smooth anxiety, PhD candidates, sit at your best ease and work peacefully!

Once you have written (and discussed) your “realistic PhD thesis”, if you have chosen (and got the opportunity) to be a professional researcher (studying and producing original research), then you could start working for an ERC Grant! You know how to work hard (without anxiety), also in this case, **be realistic!**

The story that follows is the story of Francesco Topputo: he graduated here (few cycles ago) with a PhD in *Aerospace Engineering* (on a very astrodynamical subject dealing with orbits and low energy space missions) and has just been awarded with a **CoG**, a particular ERC grant. How did he succeed? I would say ... **being realistic** and **working hard** (without anxiety).



First: what is a CoG?

We already talked about this kind of grants, [few newsletters ago](#), in an interview of the actual President of the [ERC Scientific Council](#). In brief, this is the business: if you know that your ideas and skills are good (a convincing CV for your topic, an appealing research question to be answered and some smart solutions to find those answers), then you might put your proposal to paper and file it to [a group of wise women and men](#) (gender is balanced, in the *ERC Scientific Council*), asking them to grant your project. ERC grants support individuals: young in particular but not only (see [here](#) for more info). After a couple of year from the discussion of your thesis, you might apply for an “ERC Starting Grant” (**StG**). Few years later, you might apply for an “ERC Consolidator Grant” (**CoG**).



Grants may be assigned to any topic: «excellence as the sole criterion» (see [here](#) the most recent examples).

Years after your PhD thesis discussion ...

Of course, to obtain an ERC grant is a tough path. The success rate is low: in the last 15 years of calls, less than 10% of all the applications were granted. Italian applicants are even less, about 6%, but growing. But this rate takes into account the few ones who apply, not the whole community of researchers! Just remind that your University (Polimi in particular, ask to Servizio Ricerca: ricerca@polimi.it) they may help you to achieve this goal.



European Research Council
Established by the European Commission

Let us point out what European Research Council is (also if you probably already know!): it funds basic research and it might fund you at any stage of your academic career (after your PhD degree). So, start browsing its **WEBSITE** now!!

Also take note that our Research Office may not only provide you information about ERC calls: its helpDesk is happy to support you to design your research ideas, to draft your research project and to apply for a grant.

In any case, our Research Office is here to support you in your career development, (starting from your CV writing) and to accompany you in your path, as early stage researchers, also through training and targeted activities.

Contact: **RICERCA@POLIMI.IT**



Prof. Topputo has been granted!

The interesting part of prof. Topputo's story is not its happy ending but how he managed to succeed after a first failure. Six years ago – he says – «I applied for a Starting Grant but my proposal was weak in few points, and had a couple of flaws: it didn't even go to Step 2 (ERC proposals are assessed through Step 1, Step 2, and Final Interview)». The lesson he learnt? That the going is tough and that you don't have a second chance. Well, if you lose your chance for a **StG**, you could at least try for a **CoG**!

So, Francesco started working hard to strengthen both his *CV* and his *idea* for a successful *CoG*.

For what concerns the *CV*, «I benefited from a very nice little grant – by Fondazione Cariplo and Regione Lombardia to support ERC applicants – that allowed me to hire two collaborators and win other competitive grants.

These projects – [LUMIO](#) above all – granted me visibility within the community, and let me widen my research group». So, while still a young researcher, Francesco entered the editorial board of Scientific Journals, become member of international scientific committees (i.e. American Astronautical Society – AAS), and never stopped publishing papers (but: «Instead of diluting my time on a number of works, I focussed on few, high-quality articles. The aim was to publish papers that might represent proof of concepts for my ERC project»). Meanwhile, all these (and the previous) efforts made soon Francesco a tenured Associate Professor.

Francesco never stopped to work on his *idea* and put much effort to deliver a rock-solid proposals: «I never stopped thinking of it. I used to figure it out almost every day for years until the time to put the pen on paper approached. After the summer of 2018 I met multiple times with my PhD students to elaborate the idea and to sharpen the concept. In November 2018 I started writing. I used to write, read, delete, and re-write. Sometimes I used to write just 10 lines in one full day. I worked during the winter holidays, including Christmas and New Year Day».

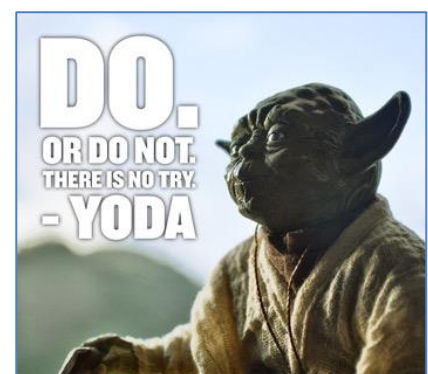
«By the deadline in February 2019 I felt I delivered a very strong proposal. It was edited tens of times». Francesco's project EXTREMA passed *Step 1* in May 2019 and was invited for the *Final Interview* in October: «a 6 min (sharp!) presentation, followed by 19 min (sharp!) of questions and answers». He spent a month to prepare 5 slides worth 2M€, that will last 5 years and recruit 8 new international collaborators. When he was notified for the grant, Francesco cried for joy.

«There are no free meals» he wrote in his LinkedIn page.

Francesco's story reminds me a quote from another (older times) astrophysic, saying «If others would think as hard as I did, then they would get similar results» (that seems was Newton, Isaac).

But Francesco considers his results as the results of a scientific community: «Most of credit goes to the PhD students in my group: Without the help of the PhD students I work with, this achievement wouldn't have happened. A big acknowledgment goes to Vittorio Franzese, Carmine Giordano, Karthik Mani, Yang Wang, Christian Hofmann, Gianmario Merisio, and Mattia Pugliatti»

Yes, the whole group is ... below, someone in a videocall!!.





CALLS AND EVENTS



GMT PRIZE FOR THE BEST THESIS IN MECHANICS OF MATERIALS

The Mechanics of Materials Group of the AIMETA (Italian Association of Theoretical and Applied Mechanics) issues a prize for the best PhD thesis in Mechanics of Materials. All candidates having defended their PhD theses in 2019 at an Italian University may apply. The prize consists in a diploma and a participation grant to the congress GIMC-GMA-GBMA 2020 that will be held in Reggio Calabria, 9-12 September 2020. During the congress the winner will deliver an invited lecture to present his/her results.

The following documentation must be submitted (email) to all members of the GMA Steering Committee (lorenzo.bardella@unibs.it, marco.paggi@imtlucca.it, giovanni.noselli@sissa.it):

- A pdf version of the thesis (plus a 2-3 pages English summary if not in English)
- Candidate's CV (in English)
- Recommendation letter written by the Supervisor (in English or in Italian)

Deadline: 16th February 2020



CEI PRIZE FOR THE BEST THESIS IN REGULATIONS IN THE ELECTROTECHNIC, ELECTRONIC AND TELECOMMUNICATIONS SECTORS

The CEI - Best Degree Thesis Award is dedicated to graduates who have defended between 1 January 2019 and 29 February 2020 a Master Thesis directly related to regulations and/or standardization in the Electrotechnic, Electronic and Telecommunications sectors. For more information and to apply please inspect the website (in Italian) <http://www.ceiweb.it/it/eventi-it/premi-cei.html>

Application deadline: 15th March 2020



MILANO DESIGN PHD FESTIVAL - 19-21 FEBRUARY 2020

Milano Design PhD Festival is a program of meetings and events with the international protagonists of design culture. Established in 2009, the Festival was born as the place where the PhD candidates of the doctoral programme in Design of Politecnico di Milano, who completed their commitment could defend their thesis.

Since its birth, the doctoral programme propelled the manifold research activities conducted in the Department of Design. A community of almost two hundred scholars, research fellows and PhD students focused on both probing the disciplinary foundations of design and increasing its fields of application.

Over the years the Milano Design PhD Festival became an international occasion for discussing several issues in design process among Italian and international researchers, PhD candidates and world mentioned professors and scholars.

19-21 February 2020 - Politecnico di Milano, Campus Bovisa, via Candiani 72



SEMINARS AND WORKSHOPS



RESEARCH CHALLENGES AND OPPORTUNITIES FOR DEVELOPMENT OF ADVANCED FAULT DETECTION SYSTEMS FOR MACHINERY

Prof. Prof. Markus Timusk, Laurentian University

This talk will discuss the challenging and rewarding, multi-disciplinary research area of developing fault detection systems for machinery. The talk will also discuss



some of the specific maintenance challenges associated with deep and ultra-deep mining.

February 21st, Department of Mechanical Engineering



STARTING COURSES – PHD SCHOOL

APPROACHES TO RESILIENCE: SOCIAL, ECONOMIC, ENVIRONMENTAL AND TECHNOLOGICAL CHALLENGES OF CONTEMPORARY HUMAN SETTLEMENTS

Prof. Alessandro Balducci

The critical-methodological approaches and operational tools that the course proposes are aimed at increasing the awareness and skills necessary to face the social, economic, environmental and technological challenges posed by contemporary urban and territorial contexts and to make them more resilient.

From 3rd to 18th February 2020



ETHICS AND TECHNOLOGY

Prof. Tanca Letizia, Schiaffonati Viola, Tamburrini Guglielmo, Sabine Ammon

In this course the ethical and social aspects of technoscience will be addressed in engineering, design, and architecture. This course aims at showing how the decision to develop a technology (meant at large), the processes of its design, development, management, control and production are inherently moral.

From 24th to 28th February 2020



EXPLORING PUBLIC DEBATES SURROUNDING ACADEMIC TOPICS THROUGH DATA DRIVEN APPROACHES

Prof. Mauri Michele, Colombo Gabriele

The goal of the course is to make students aware of the context of their research issue and of the network of actors that shape it. Students will get a deeper knowledge of the conversations around their research topic and they will be able to identify the actors that have to be engaged in order to have an impact.

From 20th February to 8th April 2020



PROJECT MANAGEMENT (IN ACTION)

Prof. Mancini Mauro

The course aims at introducing the students in the characteristics of project-based operations and offering them the opportunity to practicing on the tools and techniques for the planning and control of projects. Three sectors will be specifically addressed - Oil and Gas, civil and ICT - in order to share practical techniques to manage small, large and mega projects.

From 3rd to 7th February 2020



PROJECT MANAGEMENT BASICS

Prof. Beffani Armando, Fuggetta Alfonso, Grilli Colombo Sara

Develop Project Management competencies and provide basic tools and techniques for Project Management activities

From 5th to 18th February 2020



RESOURCE PLANNING AND MANAGEMENT WITHIN SUSTAINABLE DEVELOPMENT

Prof. Casagrandi Renato, Castelletti Andrea Francesco, Colombo Emanuela, Morello Eugenio, Rulli Maria Cristina

The mission is to increase the understanding for Ph.D candidates about the global challenges of development at the light of the 2030 Agenda. The main goals are 1) to deepen the rational and the implication on global resource management and 2) to provide a context to framework their research within the paradigm of Sustainable Development.

From 3rd to 7th February 2020





RISK, RESILIENCE, AND SUSTAINABILITY IN SCIENCE AND ENGINEERING

Prof. De Michele Carlo

The aims of this Course are two: 1) to push the Ph.D. students to think and reflect on general and important multidisciplinary concepts like "risk", "resilience" and "sustainability", and 2) provide tools to address and quantify such concepts.

From 24th to 28th February 2020



STARTING COURSES – DOCTORAL PROGRAMMES

PHD IN MECHANICAL ENGINEERING

ADDITIVE MANUFACTURING FOR SPACE AND AEROSPACE APPLICATIONS

Prof. Tommaso Ghidini (ESA), Prof. Bianca Maria Colosimo

Aim of the course is to provide the students an in-depth knowledge of all the different Additive Manufacturing technologies and their space and aerospace applications.

From 21st February 2020



PHD IN INFORMATION TECHNOLOGY

AUTOMATED VERIFICATION AND MONITORING OF TIMED SYSTEMS

Prof. Marcello Maria Bersani

The goal of this course is to present the state-of-the-art techniques and tools for the automated formal verification and monitoring of real-time systems, in particular those requiring a continuous notion of time. These techniques are especially useful for the formal analysis of safety-critical embedded and cyber-physical systems. The course provides the theoretical foundations of the formal analysis of real-time systems, and demonstrates some of the state-of-the-art tools in this field.

From 3rd February to 4th March 2020



DISTRIBUTED ALGORITHMS FOR OPTIMIZATION AND CONTROL OVER NETWORKS

Prof. Maria Prandini

This course will introduce the students to a mathematical framework for the analysis and design of distributed decision making schemes in multi-agent systems seeking convergence to the optimal cooperative solution. The case when uncertainty is affecting the multi-agent system is also addressed.

From 10th to 14th February 2020



SLIDING MODE CONTROL: THEORY AND APPLICATIONS

Prof. Mara Tanelli

The course will present the sliding-mode control theory, which has been successfully applied to many diverse application domains. The course will start providing the theoretical basis of the approach, and will present the most widely used control algorithms, together with hints to the state-of-the-art approaches present in the scientific literature. Space will be also given to industrial applications, with main reference to Automotive, Robotics and Smart Grids.

From 17th to 20th February 2020



OTHER NEWS

MECCPHD COLLOQUIA DOCTORALIA 2020

From February 13th, final Colloquia Doctoralia of PhD Candidates in Mechanical Engineering will be held at the relative Department.

From February 13th 2020

