

University Academic Curriculum Vitae

Personal information

Yuri Borgianni
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Education since leaving school

- 2005, M.Sc. degree in Mechanical Engineering, Università degli Studi di Firenze, Florence, Italy (hereinafter UNIFI). Title of the thesis: “TRIZ features: nuove funzionalità nei sistemi CAD di supporto alla progettazione concettuale” (*TRIZ features: new functions in CAD systems to support conceptual design*)
- 2006, Habilitation to the profession of Engineer, UNIFI
- 2014, PhD in Industrial Engineering, UNIFI. Title of the thesis: “A methodological toolkit to support innovation processes in industry”

Present appointment

- Title of appointment: Research program “Engineering Design”
- start of the present appointment: October 1st, 2019
- Level of appointment: Senior Assistant Professor (RTD/A) in the Academic Discipline (SSD) ING-IND/15 “Design methods for industrial engineering” – Competitive Sector 09/A3 (Dr. Borgianni has had the same appointment at the junior level in the period January 7th 2015 – September 30th 2019)
- Employer: Free University of Bozen|Bolzano (hereinafter UNIBZ), Bolzano (Italy), Faculty of Science and Technology (hereinafter FaST)
- Brief description of responsibilities: the tasks to be performed as Assistant Professor consist in research, teaching (at University level) and third-mission activities. More in details, the applicant’s efforts in the research field (mainly within engineering design, product innovation, industrial production), whose outputs are mostly described through scientific publications, are exploited in order to update the taught contents and to find new application and divulgation avenues, especially with respect to the industrial and social fabric of the Autonomous Province of Bolzano – South Tyrol. Besides, the participation in various University Councils is aimed to foster the circulation of information and ideas to improve the functioning of the employer Institute.

Professional experience

From / to	Job title	Name of academic Institution	Academic level	Responsibilities
Mar 1 st , 2006 – Aug 31 st , 2007	Development of tools and procedures for product analysis and the systematic generation of evolution scenarios	UNIFI	University Grant	University research aimed to define scenarios for different industrial sectors based on experts’ opinions and literature (especially patent literature)
Sep 15 th , 2007 – Oct 31 th , 2008	Building a database of technical artefacts and processes, which are relevant for Energy and Environment District - Trentino	UNIFI	University Grant	University research aimed to provide information for developing new sustainable engineering systems in Trento province and analyze

				ideas emerged in the same territory
Nov 1 st , 2008 – Oct 31 st , 2012	Forecasting methodology for evaluating the social and economic impact of product and process innovations	UNIFI	Research Assistant	University research aimed to link technical and non-technical information in order to highlight the most critical factors in engineering design processes
Nov 1 st , 2012 – Jan 6 th , 2015	Study of a methodology based on value-innovation for the creative development of products, processes and services	UNIFI	Research Assistant	University research aimed to support decision-making in engineering design based on aspects that have been identified as the most impacting to successful innovation

During the period that can be referred to previous appointments at UNIFI (March 2006 – January 2015), the applicant has provided his research contribution in some funded projects, see below.

Name of the project	Acronym	Funds	Years of activity	Scientific Responsibility
Leather Innovation Network	LEATHERIN	DoCUP Tuscany Region	2006	Dr. Gaetano Cascini
Technology MechCluster	TMC	DoCUP Tuscany Region	2006	Dr. Gaetano Cascini
Just in Time for Shoes	JITS	DoCUP Tuscany Region	2007-2008	Dr. Gaetano Cascini
Innovation within the business process of camper vans	REICA	DoCUP Tuscany Region	2008-2009	Prof. Paolo Rissone
PATent LIBrary	PATLIB	Ministry of the Economic Development	2013-2014	Dr. Federico Rotini
ICT Solutions to support value innovation in the industrial processes of the footwear sector	ICT4SHOES	POR CReO FESR 2007-2013	2012-2014	Dr. Federico Rotini

During the period that can be referred to previous appointments at UNIFI (March 2006 – January 2015), the applicant has provided his research contribution in some research agreements, see below.

Name/topic of the agreement	Clients and beneficiaries	Years of activity	Scientific Responsibility
Increasing efficiency of coffee machines	Jolly Caffé Spa, I2T3 Onlus	2006	Dr. Gaetano Cascini
ICT Solutions to support production processes in the painting industry	SO.VER. srl	2007	Dr. Gaetano Cascini
Patent analysis of technical systems for the exploitation of renewable energy from geothermic sources	Consorzio per lo Sviluppo delle Aree Geotermiche della Toscana meridionale, Dr. Wolf srl	2008	Dr. Gaetano Cascini
Innovative methods to identify new fields of application for the polyurethane manufacturing technologies	RGS Europa	2009	Prof. Paolo Rissone
IT Tool to support SMEs in systematic innovation, based	Dr. Wolf srl	2009-2011	Dr. Federico Rotini

on a structured methodology and an open innovation paradigm			
Technology benchmark for the industrial fabric of the area Valdelsa Senese	PIN srl	2011	Dr. Federico Rotini
Patent search within engines for acoustic diffusors	B&C Speakers spa, Dr. Wolf srl	2011	Dr. Federico Rotini
Patent search within systems for active noise control	B&C Speakers spa, Dr. Wolf srl	2013	Dr. Federico Rotini
Study of innovative processes adopted by a pilot sample of Tuscan firms	PIN srl	2013	Dr. Federico Rotini
Patent analysis within the call Unioncamere 2014	ErreQuadro Srl	2014	Dr. Federico Rotini

During the period that can be referred to previous appointments at UNIFI (March 2006 – January 2015), the applicant has performed some professional activities for private and public institutions in the form of occasional professional services. The activities are summarized in the table below, which briefly includes the scope of the professional services.

Topic of the activity	Client	Years of activity
Application of creative methods to solving problems concerning grinding machines	Turbotecnica srl	2006
Investigation of diffused practices within Tuscan mechanical firms	CNA Toscana	2006
Supporting the development of a software application for the smart analysis of patent documents	Dr. Wolf srl	2009 & 2011
Investigation of the level of inventiveness of Tuscan firms by means of statistical considerations on patent activity	Alintec scarl	2009
Lectures and training in the field of Intellectual Property	Fondazione per la Ricerca e l'Innovazione (within UNIFI)	2014

Experience in academic teaching

See the attached *Teaching portfolio*

Other academic responsibilities

The applicant is:

- Member of the PhD Committee “Sustainability Energy and Technologies” at FaST, UNIBZ, since 2016; he has been appointed for the membership of the PhD Committee “Advanced System Engineering” at FaST, UNIBZ, starting from 2019
- Member of the Evaluation Committee for the selection of participants of exchange programs (Erasmus+ and Bilateral Agreements) at FaST, UNIBZ since Academic Year 2019/20
- Head of the laboratory “Mechanical Lab” at UNIBZ
- eligible to participate (with no voting right) in the following Course Councils at FaST, UNIBZ:
 - B.Sc. in Industrial and Mechanical Engineering
 - M.Sc. in Industrial Mechanical Engineering
 - B.Sc. in Wood Engineering

The applicant has organized:

- the International Workshop “Co-creative design for successful innovation”, held at UNIBZ, June 13th-14th, 2017

- the seminar “Eye tracking and biometric systems: breaking into industrial engineering”, held at UNIBZ, December 7th, 2017, together with Dr. Erwin Rauch
- the lecture “Reverse Engineering for big volumes: time-of-flight and phase shift 3D scanners”, held by prof. Lapo Governi (UNIFI) on November 24th, 2016 – cycle “Series of Lectures” at FaST, UNIBZ
- the lecture “The journey towards circular economy: how can we reinvent sustainable value creation”, held by prof. Daniela Pigosso (Technical University of Denmark) on November 29th, 2018 – cycle “Series of Lectures” at FaST, UNIBZ

The applicant has provided his contribution for the following scientific events:

- 20th International Conference on Engineering Design 2015 (ICED15), Milan, Italy, 27-30 July 2015, acting as helper for the presentation sessions
- ADM (Italian Association for Machine Designers) and SSD ING-IND/15 Workshop, Milan, Italy, 14-15 February 2017, acting as Moderator for the session “Methods for the Conceptual Design”
- ADM (Italian Association for Machine Designers) and SSD ING-IND/15 Workshop, pisa, Italy, 14-15 September 2017, acting as Moderator for the session “Industry 4.0”
- TRIZ Future Conference 2017, Lappeenranta, Finland, 4-6 October 2017, acting as chair of a podium session
- 2018 & 2019 Spring School “Design Methods and Processes”, Alta Scuola Politecnica (ASP), acting as lecturer and tutor (details in the Teaching Portfolio)
- 6th International Conference on Sustainable Design and Manufacturing, Budapest, Hungary, 4-5 July 2019, being appointed as co-chair of the Invited session “Systematic Innovation Tools for Eco-Design: Products, Processes and Assessment Methods”

The applicant has acted as co-chair for the following workshops:

- “New Research Topics in Design for Additive Manufacturing” hosted by the Design Society’s Special Interest Group “Design for Additive Manufacturing” at the Design Conference 2018, Dubrovnik, Croatia, 21 May 2018
- “Neurophysiological Measures and Biometric Analyses in Design Research” at the Design Computing and Cognition ’18 Conference, Lecco, Italy, 1 July 2018

The applicant has held the invited lecture “The outreach of engineering design and instructions not to get lost” at the Technical University of Denmark, Copenhagen, Denmark, May 1st 2019

The applicant has been Reviewer of Nikolai Efimov-Soini’s PhD thesis “Ideation Stage in Computer-Aided Design”, Lappeenranta University of Technology, Finland

The applicant is currently supervisor of the Research Assistants Lorenzo Maccioni and Aurora Berni

Memberships

The applicant is member of the following scientific bodies:

- Design Society, in which he is member of the Steering Committee of Special Interest Groups “Design for Additive Manufacturing” and “Sustainable Design”
- European TRIZ Association (ETRIA)
- Associazione Nazionale Disegno e Metodi dell'Ingegneria Industriale (ADM), Italian national Association of Design methods for industrial engineering

The applicant is member of the Editorial Board of the journal Sustainability, ISSN 2071-1050

The applicant is chair of the Outreach Committee (within the Editorial Board) of the Journal of Integrated Design & Process Science, ISSN print 1092-0617

The applicant is reviewer for the following scientific journals:

- Journal of Engineering Design;
- Research in Engineering Design;
- Design Science;
- International Journal of Design Creativity and Innovation;
- Journal of Integrated Design and Process Science;
- Artificial Intelligence for Engineering Design, Analysis and Manufacturing (AI EDAM);
- International Journal of Product Development ;
- Total Quality Management & Business Excellence;
- International Journal of Production Research;
- International Journal of Services Technology and Management;
- Journal of Business Research;
- International Journal of Human-Computer Studies;
- CIRP Journal of Manufacturing Science and Technology;
- Computer Aided Design and Applications;
- Electronic Journal of Business Research Methods;
- Journal of Systems Science and Systems Engineering.

The applicant is/has been member of the scientific committee, reviewers' board or program committee of the following international conferences and events:

- International Conference on Engineering Design (ICED)
 - 20th edition, Milan, Italy, 27-30 July 2015
 - 21st edition, Vancouver, Canada, 21-25 August 2017
 - 22nd edition, Delft, The Netherlands, 5-8 August 2019
- International Conference on Axiomatic Design (ICAD)
 - 9th edition, Florence, Italy, 16-18 September 2015
 - 10th edition, Xi An, People's Republic of China, 21-23 September 2016
- International Conference on Sustainable Design and Manufacturing (SDM)
 - 3rd edition, Chania, Greece, 4-6 April 2016
 - 4th edition, Bologna, Italy, 26-28 April 2017
 - 6th edition, Budapest, Hungary, 4-5 July 2019
 - 7th edition, Split, Croatia, 24-26 June 2020
- ETRIA TRIZ Future Conference (TFC)
 - 18th edition, Strasbourg, France, 29-31 October 2018
 - 19th edition, Marrakech, Morocco, 9-11 October 2019
- International Design Conference

- 15th Edition, Dubrovnik, Croatia, 21-24 May 2018
- 16th Edition, Dubrovnik, Croatia, 18-21 May 2020
- 18th IIF Workshop “Forecasting New Products and Services: Research and Applications”, Milan, Italy, 12-13 May 2016
- International Joint Conference on Mechanics, Design Engineering & Advanced Manufacturing 2016 (JCM2016), Catania, Italy, 14-16 September 2016
- 27th International Conference on Flexible Automation and Intelligent Manufacturing, Modena, Italy, 27-30 June 2017
- 5th International Conference on Design Creativity, Bath, United Kingdom, 31 January – 2 February, 2018
- 15th International Design Conference - DESIGN 2018
- Eighth International Conference on Design Computing and Cognition, Lecco, Italy, 2-4 July 2018
- The 25th International Conference on Transdisciplinary Engineering, Modena, Italy, 3-6 July 2018
- Design Science Research (DSR) 2018 Workshop on Data Driven Design and Learning, Montreal, Canada, 23-25 August 2018
- 7th International Conference on Research Into Design, Bangalore, India, 9-11 January 2019
- ADM2019 International Conference, Modena, Italy, 9-10 September 2019

Research and scholarship

- Consistently with the reference Scientific Sector and the research activities foreseen in the last contract, the applicant is currently carrying out studies in the broad field of engineering design. While he keeps doing research in fields such as inventive design, fuzzy front end and stimulated ideation (see next item), new and emerging fields have attracted increasing interest during the last few years, namely:
 - Eco-design
 - Human Behavior in design
 - Virtual Reality
 - Design for Additive Manufacturing
 - Experimental design with biometric measures.
- The applicant's traditional research fields (details in the section Achievements in the main research topics), which correspond to the main topics addressed in the previous five years include
 - Design methods for problem solving and conceptual design
 - Value-oriented design in the initial product development phases
 - Design Creativity
 - Forecasting-based decision-making techniques for product innovation
 - Means to upgrade industrial processes
- Research grants and contracts (see below)

Period	Award Holder(s)	Funding Body	Title	Amount received
01/07/2015 – 31/12/2017	Dr. Yuri Borgianni	FaST, UNIBZ, RTD call 2015	ChANging design requirements – aCquiring knowledge from ApplicatioNs of	€4500,00

			attractive quality theory (CAN-CAN)	
01/12/2015 – 31/12/2017	Dr. Cinzia Battistella (Principal Investigator until 11/05/2016); Dr. Yuri Borgianni (member of the research team until 11/05/2016; Principal Investigator since 12/05/2016); other members of the research team	UNIBZ, RTD call 2015	Product-service system oriented business models: a sustainable application into sustainable companies (PROSECCO)	€ 8000,00
01/07/2016 – 31/12/2017	Dr. Yuri Borgianni (Principal Investigator); other members of the research team	UNIBZ, RTD call 2015	STimulating And oRganizing The deVeLopment of crEative iDeas (STARTLED)	€ 16200,00
01/11/2016 - ongoing	Dr. Pasquale Russo Spena (Principal Investigator until 31/12/2018); Dr. Guido Orzes (Principal Investigator since 01/01/2019); Dr. Yuri Borgianni (Co-Investigator) ; other members of the research team	UNIBZ, CRC call 2016	"Additive Manufacturing FDM: Dimensional Accuracy and Product Acceptability" (AMDAPA)	€ 45000,00
01/11/2017 - ongoing	Dr. Erwin Rauch (Principal Investigator); Dr. Yuri Borgianni (Co-Investigator until 28/02/2019; Principal Investigator since 01/03/2019); other members of the research team	UNIBZ, CRC call 2017	Industrial Usability of Eye Tracking for Manufacturing and Design in SMEs (EYE-TRACK)	€ 63000,00
01/05/2018 - ongoing	Prof. Dominik Matt (Principal Investigator for UNIBZ); Dr. Yuri Borgianni (team member); other team members	European Regional Development Fund (ERDF) - Interreg Italy-Austria. Grant ITAT3018	E-EDU 4.0 - Engineering Education 4.0	€ 1150000 (in total); € 180000 (UNIBZ)
01/07/2019 - ongoing	Dr. Yuri Borgianni (Principal Investigator); other members of the research team	UNIBZ, RTD call 2019	fine-tuning new and smart ECO-design guidelines (few sECOnDs)	€ 9418,92

Achievements in the main research topics

The most significant achievements in research and scholarship illustrated in relation to the main research areas of the applicant are displayed through the bullet list that follows. The labels in brackets refer to the codes assigned to the contributions authored by the applicant that are provided separately in the Publications section below.

- Design methods for problem solving and conceptual design
In this branch of research, the applicant has focused on the undertaking of studies and the development of specific tools with the aim to support designers' learning and adoption of acknowledged problem solving methodologies. Theoretical studies with a particular focus on the Theory of Inventive Problem Solving (TRIZ) [B8, B12, B13, B28, B46], which have been treasured to conduct a state-of-the-art analysis [A17], have strived to individuate both employment difficulties and unexplored fields of

application. With respect to the former, a TRIZ-based computerized system has been developed and successfully tested with real case studies proposed by several SMEs [A3, A6, B3, B4, B5, B9, W1]. It has been demonstrated how a structured process allows designers and problem analyzers to describe complex technical systems in a way that is compliant with TRIZ ontology, which leads to an easier search for appropriate solutions or improvements. Potential implementations of the system with common design interfaces have been proposed [A7, A10], as well as alternative application strategies outlined [B10]. With respect to the latter, particular attention is paid towards the integration of TRIZ with other methodologies, markedly Axiomatic Design, due to the former's individuated shortcomings when dealing with particular typologies of technical problems, such as controllability and flexibility of use [B22, B23, B27].

➤ Value-oriented design in the initial product development phases

Companies that design and manufacture their own products face the challenge of implementing customer demands into new artefacts, being constrained by the range of mastered technologies and fields of expertise. This area of research challenges the commonly experienced difficulties in terms of conflicting views between different decision-makers, stakeholders [B20] and experts, specifically marketers and product engineers. In classical schemes of product development tasks, a specific phase commonly referred as Product Planning aims to identify (new) people's needs and value drivers the new designs should embody. It is in this phase that the different views of various members of Research and Development teams should be aligned and harmonized. The research contribution of the applicant is articulated in a number of activities, whose findings support product development teams in designing radically innovative deliverables. First, academic proposals to tackle the present challenge have been gathered and their pros and cons highlighted [B15].

Second, the approaches of companies and SMEs toward Product Planning have been investigated and their emerging needs compared with the requirements fulfilled by techniques described in the literature [A16], whose research intensity and trajectories are treated in a dedicated work [A21].

Third, successful and unsuccessful product development initiatives targeting radical innovation have been gathered in order to identify the actions that have resulted critical to thriving in the marketplace [A4, B2]. A decision-making support tool has been developed based on this investigation [A8, B7, B24].

Fourth, by having identified the critical role of ideation activities in the discussed design task, a tool that supports the exploration of product development opportunities by means of textual prompts has been proposed and tested by sector experts and entrepreneurs [A14, A15, B17, B19]. This tool has undergone a further development in terms of the creation of a software application, whose usability has been investigated in the framework of the STARTLED project [B36]. Testing campaigns have involved people with different backgrounds, because of the expected large number of expertise fields that might benefit from the exploitation of the system.

Fifth, by having individuated the increasing importance of user experience [B38] when confronted with brand new products, procedures have been investigated that allow for an insightful exploration of people's reactions. Many of these procedures foresee the use of biometric devices, in particular Eye Tracking and Electroencephalography systems [A22, A23, A24, A25, B39, B40, B45, B46, W7] – the potential of these technologies in industrial

engineering is the core of the EYE-TRACK project [N1]. Experiments that deploy these systems have been conducted that enable the definition of points of interests and associated reactions and emotions. A testing protocol has been consequently developed in order to evaluate the reactions to artefacts fabricated by means of Additive Manufacturing instead of traditional technologies (AMDAPA project) [A24]. The results intend to contribute in terms of indications for more conscious approaches to Design for Additive Manufacturing, whose maturity in the education field has been assessed [B44]. Besides, techniques such as Reverse Engineering and Rapid Prototyping enable more design freedom (critical during Product Planning) and make it possible to perform more accurate and reliable studies in the field of user experience in design. The same applies to Virtual Reality technologies; the applicant's studies in this field are ongoing and considerably focused on need of South Tyrolean industry [B41].

Eventually, another hot topic in the applicant's current research activities concerns the capability to foster value-driven innovation in eco-design and hence contribute to environmental and social sustainability [A23, B30, B37, W4, W6]. More specifically, studies in eco-design target the development of guidelines for designing successful environmental-friendly products, which is the main scope of the few sECONds project. Methodological shortcomings of current methods for eco-design have been studied [B42] and initial evidence about advantageous eco-design moves has been extracted [A23, A26, B43, B46].

➤ Design Creativity

Beyond being leveraged as an essential dimension for enabling the successful execution of the above product development phases, creativity is studied by the applicant in order to assess its level, perception [B14] and empower designers in different conditions [B25, B32, W5]. The assessment of creativity embodied by devised products and services is indeed crucial when a creative procedure or any other treatment are investigated. An original approach has been proposed and verified with respect to new services [A9, B11]. On the other hand, the display of unexpectedness and astonishment is to be considered as an extreme grade of embodied creativity. These phenomena are investigated in order to leverage their defixating effect on designers and define guidelines for developing surprising products with high chances of differentiation in an increasingly competitive marketplace [A18, B18, B21, B29, B33].

➤ Forecasting-based decision-making techniques for product innovation

The aforementioned early design phases are characterized by a high level of uncertainty and the capability of forecasting the impacts of new deliverables on market and society would be of paramount usefulness. In addition, some factors are often overlooked during design, such as observed product evolution cycles [A5] and the changing nature of customer preferences. With respect to these challenges, the applicant has contributed to the development of practical forecasting instruments capable of supporting decision-making. They regard different areas, which are supposed to benefit from anticipating results of product development actions to the greatest extent.

First, a decision support tool to predict the chances of success of products displaying new elements of value has already been mentioned above [A8]. Second, a framework has been introduced to establish the most valuable product development alternative among a mixed sample of radical and incremental innovation options [A13, B16].

Third, within the CAN-CAN project, the changes in consumers' preferences and relevance of product requirements have been evaluated in quantitative terms by benefitting from repeated experiments that have employed the Kano's theory of attractive quality [A11, A19, B26, W2].

Fourth, within the PROSECCO project, the advantages and drawbacks that are connected with the shifting from traditional manufacture of industrial products to the Product-Service Systems paradigm are systematically investigated. A quantitative coefficient, based on scenarios presented to a group of firms, is capable of forecasting how the introduction of the service components in an established business model affects revenues [A20, B31, W3].

➤ Means to upgrade industrial processes

The development of new products, which is the main thrust of the applicant's research, has clear repercussions on industrial, manufacturing and business processes [B6]. Adaptation of current processes to deal with new product requirements might result in phases and activities that are no longer efficient; consequently, redesign of processes might result necessary [L1]. An analysis framework has been developed that compares the contribution of phases to value and customer satisfaction and the resources they consume [A1, A2, B1]. This applies to both existing processes and simulated scenarios. Guidelines to reengineer industrial processes are provided according to the analysis, also in case of great uncertainties [A12]. Applications regard various industrial fields.

Publications

Books

L1 Rotini F., Borgianni Y., Cascini G.: "Re-engineering of Products and Processes - How to achieve global success in the changing marketplace", Springer, London, United Kingdom, 2012.

International Journals

A1 Borgianni Y., Cascini G., Rotini F.: "Process Value Analysis for Business Process Re-engineering", Proceedings of IMechE, Part B: Journal of Engineering Manufacture, 224(2), 2010, pp. 305-327. DOI: 10.1243/09544054JEM1460.

A2 Borgianni Y., Cascini G., Rotini F.: "Wood pellet manufacturing improvements through product-driven Process Value Analysis", Proceedings of IMechE, Part B: Journal of Engineering Manufacture, 225(5), 2011, pp. 761-772. DOI: 10.1243/09544054JEM2067.

A3 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Model and Algorithm for Computer-Aided Inventive Problem Analysis", Computer-Aided Design, 44(10), 2012, pp. 961-986. DOI: 10.1016/j.cad.2011.02.013.

A4 Borgianni Y., Cascini G., Rotini F.: "Investigating the patterns of value-oriented innovations in Blue Ocean Strategy™", International Journal of Innovation Science, 4(3), 2012, pp. 123-142. DOI: 10.1260/1757-2223.4.3.123.

A5 Borgianni Y., Rotini F.: "Innovation Trajectories within the Support of Decisions: Insights about S-Curve and Dominant Design Models", International Journal of Innovation Science, 4(4), 2012, pp. 259-267. DOI: 10.1260/1757-2223.4.4.259.

A6 Becattini N., Borgianni Y., Cascini G., Rotini F.: "A TRIZ-based CAI Framework to guide Engineering Students towards a Broad-spectrum

Investigation of Inventive Technical Problems”, *International Journal of Engineering Education*, 29(2), 2013, pp. 318-333.

A7 Becattini N., Borgianni Y., Cascini G., Rotini F.: “About the Introduction of a Dialogue-Based Interaction within CAD Systems”, *Computer-Aided Design and Applications*, 10(3), 2013, pp. 499-514. DOI: 10.3722/cadaps.2013.499-514.

A8 Borgianni Y., Cascini G., Pucillo, F., Rotini F.: “Supporting product design by anticipating the success chances of new value profiles”, *Computers in Industry*, 64(4), 2013, pp. 421-435. DOI: 10.1016/j.compind.2013.02.004.

A9 Borgianni Y., Cascini G., Rotini F.: “Assessing creativity of design projects: criteria for the service engineering field”, *International Journal of Design Creativity and Innovation*, 1(3), 2013, pp. 131-159. DOI: 10.1080/21650349.2013.806029

A10 Becattini N., Borgianni Y., Cascini G., Rotini F.: “Question/answer techniques within CAD environments: an investigation about the most effective interfaces”, *Computer-Aided Design and Applications*, 10(6), 2013, pp. 905-917. DOI: 10.3722/cadaps.2013.905-917.

A11 Borgianni Y., Rotini F.: “Towards the fine-tuning of a predictive Kano model for supporting product and service design”, *Total Quality Management & Business Excellence*, 26(3-4), 2015, pp. 263-283. DOI: 10.1080/14783363.2013.791119.

A12 Borgianni Y., Cascini G., Rotini F.: “Business Process Reengineering driven by customer value: a support for undertaking decisions under uncertainty conditions”, *Computers in Industry*, 68, 2015, pp. 132-147. DOI: 10.1016/j.compind.2015.01.001.

A13 Borgianni Y., Rotini F.: “Predicting the competitive advantage of design projects to dynamically support decisions in product development”, *International Journal of Product Development*, 20(15), 2015, pp. 355-381. DOI: 10.1504/IJPD.2015.073066.

A14 Bacciotti D., Borgianni Y., Rotini F.: “An original design approach for stimulating the ideation of new product features”, *Computers in Industry*, 75, 2016, pp. 80-100. DOI: 10.1016/j.compind.2015.06.004.

A15 Bacciotti D., Borgianni Y., Rotini F.: “A CAD Tool to Support Idea Generation in the Product Planning Phase”, *Computer-Aided Design & Applications*, 13(4), 2016, pp. 490-502. DOI: 10.1080/16864360.2015.1131543

A16 Bacciotti D., Borgianni Y., Cascini G., Rotini F.: “Product Planning techniques: investigating the differences between research trajectories and industry expectations”, *Research in Engineering Design*, 27(4), 2016, pp. 367-389. DOI: 10.1007/s00163-016-0223-6.

A17 Chechurin L., Borgianni Y., “Understanding TRIZ through the review of top cited publications”, *Computers in Industry*, 82, 2016, pp. 119-134. DOI: 10.1016/j.compind.2016.06.002.

A18 Becattini N., Borgianni Y., Cascini G., Rotini F.: “Surprise and design creativity: investigating the drivers of unexpectedness”, *International Journal of Design Creativity and Innovation*, 5(1-2), 2017, 29-47. DOI: 10.1080/21650349.2015.1090913

A19 Borgianni Y.: “Verifying dynamic Kano’s model to support new product/service development”, *Journal of Industrial Engineering and Management*, 11(3), 2018, 569-587. DOI: 10.3926/jiem.2591.

A20 Annarelli A., Battistella C., Borgianni Y., Nonino F.: “Estimating the value of servitization: a non-monetary method based on forecasted competitive advantage”, *Journal of Cleaner Production*, 200, 2018, 74-85. DOI: 10.1016/j.jclepro.2018.07.220

- A21 Borgianni Y., Cascini G., Rotini F.: "Investigating the future of the fuzzy front end: towards a change of paradigm in the very early design phases?", *Journal of Engineering Design*, 29(11), 2018, 644-664. DOI: 10.1080/09544828.2018.1520971
- A22 Mark B.G., Rauch E., Borgianni Y., Matt D.T.: „Eye tracking in production 4.0 – Eye tracking as a useful technology for improving production processes in the age of industry 4.0”, *ZWF Zeitschrift fuer Wirtschaftlichen Fabrikbetrieb*, 144(1-2), 2019, 1-4. DOI: 10.3139/104.112032
- A23 Maccioni L., Borgianni Y., Basso D.: "Value perception of green products: An exploratory study combining conscious answers and unconscious behavioral aspects", *Sustainability*, 11(5), 2019, 1226. DOI: 10.3390/su11051226
- A24 Borgianni Y., Maccioni L., Basso D.: "Exploratory study on the perception of additively manufactured end-use products with specific questionnaires and eye-tracking", *International Journal on Interactive Design and Manufacturing*, 13(2), 2019, 743-759. DOI: 10.1007/s12008-019-00563-w
- A25 Del Fatto V., Dignös A., Raimato G., Maccioni L., Borgianni Y., Gamper J.: "Visual time period analysis: a multimedia analytics application for summarizing and analyzing eye-tracking experiments", *Multimedia Tools and Applications*, 2019, in press. DOI: 10.1007/s11042-019-07950-1
- A26 Maccioni L., Borgianni Y., Pigozzo D.: "Can the choice of eco-design principles affect products' success?", *Design Science*, 2019, accepted

International Conferences

- B1 Borgianni Y., Cascini G., Rotini F.: "Product-driven Process Value Analysis", *Proceedings of the 20th CIRP Design Conference*, Nantes, France, April 19th-21st, 2010. DOI: 10.1007/978-3-642-15973-2-38
- B2 Borgianni Y., Cardillo A., Cascini G., Rotini F.: "Systematizing new value proposition through a TRIZ-based classification of functional features", *Proceedings of the 10th ETRIA TRIZ Future Conference* (sponsored by CIRP), Bergamo, Italy, November 3rd-5th, 2010; republished on *Procedia Engineering*, 9, 2011, pp. 103-118. DOI: 10.1016/j.proeng.2011.03.104
- B3 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Coaching the Cognitive Processes of Inventive Problem Solving with a Computer", *Proceedings of the First International Conference on Design Creativity (ICDC2010)*, Kobe, Japan, November 29th- December 1st, 2010.
- B4 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Computer-Aided Problem Solving - Part 1: Objectives, Approaches, Identification of System Requirements", *Proceedings of the 4th IFIP Working Conference on Computer-Aided Innovation*, Strasbourg, France, June 30th-July 1st, 2011. DOI: 10.1007/978-3-642-22182-8_10
- B5 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Computer-Aided Problem Solving - Part 2: a Dialogue-Based System to Support the Analysis of Inventive Problems", *Proceedings of the 4th IFIP Working Conference on Computer-Aided Innovation*, Strasbourg, France, June 30th-July 1st, 2011. DOI: 10.1007/978-3-642-22182-8_11
- B6 Borgianni Y., Cascini G., Rotini F.: "Evaluating the effects of poorly performed product development phases on customer satisfaction", *Proceedings of the 21st CIRP Design Conference*, Daejeon, South Korea, March 27th-29th, 2011.

- B7 Borgianni Y., Cardillo A., Cascini G., Rotini F.: "Design of Innovative Product Profiles: Anticipatory Estimation of Success Potential", Proceedings of the 18th International Conference on Engineering Design (ICED 11), Impacting Society through Engineering Design, Vol. 9: Design Methods and Tools pt. 1, Lyngby/Copenhagen, Denmark, August 15th-18th, 2011, pp. 246-256.
- B8 Borgianni Y., Cascini G., Rotini F.: "Preliminary studies on human approaches to inventive design tasks with a TRIZ perspective", Proceedings of the 11th ETRIA TRIZ Future Conference (sponsored by CIRP), Dublin, Ireland, November 2nd-4th, 2011; republished on Procedia Engineering, 131, pp. 39-49. DOI: 10.1016/j.proeng.2015.12.346
- B9 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Assessing the performance of computerized tools for inventive design: insights from unsatisfactory outcomes", Proceedings of the 22nd CIRP Design Conference, Bangalore, India, March 28th-30th, 2012. DOI: 10.1007/978-1-4471-4507-3_10
- B10 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Experiencing Protocol Analysis for computer guided design tasks", Proceedings of DESIGN 2012, the 12th International Design Conference, Dubrovnik, Croatia, May 21st-24th, 2012, pp. 1821-1830.
- B11 Borgianni Y., Cascini G., Rotini F.: "A proposal of metrics to assess the creativity of designed services", Proceedings of the Second International Conference on Design Creativity (ICDC2012), Glasgow, United Kingdom, September 18th-20th, 2012.
- B12 Becattini N., Borgianni Y., Cascini G., Rotini F.: "ARIZ85 and patent-driven knowledge support", Proceedings of the 12th ETRIA TRIZ Future Conference (sponsored by CIRP), Lisbon, Portugal, October 24th-26th, 2012; republished on Procedia Engineering, 131, pp. 291-302. DOI: 10.1016/j.proeng.2015.12.391
- B13 Borgianni Y., Frillici F.S., Rotini F.: "Integration of OTSM-TRIZ and Analytic Hierarchy Process for choosing the right solution", Proceedings of the 12th ETRIA TRIZ Future Conference (sponsored by CIRP), Lisbon, Portugal, October 24th-26th, 2012; republished on Procedia Engineering, 131, pp. 388-400. DOI: 10.1016/j.proeng.2015.12.431
- B14 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Does experience in design and innovation affect the perception of creativity?", Proceedings of the 19th International Conference on Engineering Design (ICED13), Design for Harmonies, Vol.7: Human Behaviour in Design, Seoul, Korea, August 19th-22nd, 2013, pp. 129-138.
- B15 Bacciotti D., Borgianni Y., Rotini F.: "Overview of methods supporting product planning: open research issues", Proceedings of the 19th International Conference on Engineering Design (ICED13), Design for Harmonies, Vol.1: Design Processes, Seoul, Korea, August 19th-22nd, 2013, pp. 389-398.
- B16 Borgianni Y., Rotini F.: "Supporting the choice of design alternatives underlying incremental and radical innovations", Proceedings of DESIGN 2014, the 13th International Design Conference, Dubrovnik, Croatia, May 19th-22nd, 2014, pp. 1463-1472.
- B17 Bacciotti D., Borgianni Y., Rotini F.: "Exploring the dimensions of value: the four dimensions framework", Proceedings of DESIGN 2014, the 13th International Design Conference, Dubrovnik, Croatia, May 19th-22nd, 2014, pp. 711-720.
- B18 Becattini N., Borgianni Y., Cascini G., Rotini F.: "An investigation on factors triggering surprise", Third International Conference on Design Creativity, Bangalore, India, January 12th-14th, 2015.

- B19 Bacciotti D., Borgianni Y., Rotini F.: "A CAD Tool to Support Idea Generation in the Product Planning Phase", Proceedings of CAD Conference and Exhibition CAD'15, London, United Kingdom, June 22nd-25th, 2015, pp. 177-182.
- B20 Borgianni Y., Rotini F., "Stakeholders' diverging perceptions of product requirements: implications in the design practice", Proceedings of the 20th International Conference on Engineering Design (ICED15), Milan, Italy, July 27th-30th, 2015.
- B21 Becattini N., Borgianni Y., Cascini G., Rotini F., "Surprise as a situated phenomenon", Proceedings of the 20th International Conference on Engineering Design (ICED15), Milan, Italy, July 27th-30th, 2015.
- B22 Borgianni Y., Matt D.T., "Axiomatic Design and TRIZ: Deficiencies of their Integrated Use and Future Opportunities", Proceedings of the 9th International Conference on Axiomatic Design, Florence, Italy, September 16th-18th, 2015; republished on Procedia CIRP, 34, 2015, pp. 1-6. DOI: 10.1016/j.procir.2015.07.002
- B23 Borgianni Y., Matt D.T., "Applications of TRIZ and Axiomatic Design: a comparison to deduce best practices in industry", Proceedings of the 15th ETRIA TRIZ Future Conference (sponsored by CIRP), Berlin, Germany, October 26th-29th, 2015; republished on Procedia CIRP, 39, 2016, pp. 91-96. DOI: 10.1016/j.procir.2016.01.171
- B24 Becattini N., Borgianni Y., Frillici, F.S., "Employing customer value criteria to address networks of contradictions in complex technical systems", Proceedings of the 15th ETRIA TRIZ Future Conference (sponsored by CIRP), Berlin, Germany, October 26th-29th, 2015; republished on Procedia CIRP, 39, 2016, pp. 73-78. DOI: 10.1016/j.procir.2016.01.168
- B25 Borgianni Y., Rotini F., "Stimulated ideation sessions in Product Planning: assessing quantitative results of individuals and groups", Proceedings of the 14th International Design Conference DESIGN 2016, Dubrovnik, Croatia, May 16th-19th, 2016, pp. 937 - 946.
- B26 Borgianni Y., "Kano's method in product design: a study of dynamic models' reliability", Proceedings of the 14th International Design Conference DESIGN 2016, Dubrovnik, Croatia, May 16th-19th, 2016, pp. 1855 - 1864.
- B27 Borgianni Y., Matt D.T., "Ideality in Axiomatic Design and beyond", Proceedings of the 10th International Conference on Axiomatic Design, Xi'an, People's Republic of China, September 21st-23rd, 2016; republished on Procedia CIRP, 53, 2016, pp. 95-100. DOI: 10.1016/j.procir.2016.07.029
- B28 Chechurin L., Lohtander M., Borgianni Y.: „What a well-trained TRIZ user can learn from other design methodologies: an initial speculation“, Proceedings of the 16th ETRIA TRIZ Future Conference, Wroclaw, Poland, October 24th-27th, 2016.
- B29 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Surprise as the inconsistency of FBS variables in evaluators' interpretation?", Fourth International Conference on Design Creativity, Atlanta, United States of America, November 2nd-4th, 2016.
- B30 Maccioni L., Borgianni Y., Rotini F.: "Sustainability as a Value-Adding Concept in the Early Design Phases? Insights from Stimulated Ideation Sessions", SDM: International Conference on Sustainable Design and Manufacturing (SDM17), Bologna, Italy, April 26th-28th, 2017. DOI: 10.1007/978-3-319-57078-5_83
- B31 Annarelli A., Battistella C., Borgianni Y., Nonino F.: "Predicting the value of Product Service-Systems for potential future implementers: results from multiple industrial case studies", 9th CIRP IPSS Conference,

Copenhagen, Denmark, June 19th-21st, 2017; republished on Procedia CIRP, 64, 2017, pp. 295-300. DOI: 10.1016/j.procir.2017.03.011

B32 Borgianni Y., Rotini F., Tomassini M.: "Fostering ideation in the very early design phases: how textual, pictorial and combined stimuli affect creativity", 21st International Conference on Engineering Design (ICED17), Vancouver, Canada, August 21st-25th, 2017.

B33 Borgianni Y., Hatcher G.: "Similarities and differences between humorous and surprising products", 21st International Conference on Engineering Design (ICED17), Vancouver, Canada, August 21st-25th, 2017.

B34 Borgianni Y.: "A framework of forecasting techniques as a checklist to minimize the likelihood of product design failures", 17th ETRIA TRIZ Future Conference, Lappeenranta, Finland, October 4th-6th, 2017.

B35 Borgianni Y., Frillici F.S., Rotini F.: "How problems are solved in TRIZ literature: the need for alternative techniques to individuate the most suitable Inventive Principles", 17th ETRIA TRIZ Future Conference, Lappeenranta, Finland, October 4th-6th, 2017.

B36 Borgianni Y., Lenarduzzi V., Rotini F., Taibi D.: "Bringing stimulated ideation in a web environment: students' evaluations of a basic software release", Fifth International Conference on Design Creativity, Bath, United Kingdom, January 31st – February 2nd, 2018.

B37 Maccioni L., Borgianni Y.: "A product success scale for supporting research in engineering design", 15th International Design Conference DESIGN 2018, Dubrovnik, Croatia, May 21st-24th, 2018

B38 Wallisch A., Maccioni L., Trautmann L., Ostermeyer E., Borgianni Y., Borg J.C.: "Lessons learnt in designing transportation solutions for elderly people following a participatory approach", 15th International Design Conference DESIGN 2018, Dubrovnik, Croatia, May 21st-24th, 2018

B39 Borgianni Y., Maccioni L., Rauch E.: "How does product design benefit from eye tracking and biometric systems? An overview on use objectives" (poster abstract), Eighth International Conference on Design Computing and Cognition (DCC18), Lecco, Italy, July 2nd-4th, 2018

B40 Borgianni Y., Rauch E., Maccioni L., Mark B.G.: "User Experience Analysis in Industry 4.0 - the Use of Biometric Devices in Engineering Design and Manufacturing", IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), Bangkok, Thailand, December 16th-19th, 2018.

B41 Borgianni Y., Maccioni L., Rauch E.: "Using Virtual Reality to match the appearance of technical installations with landscapes", Human Behaviour in Design Conference, Tutzing, Germany, April 23th-24th, 2019

B42 Maccioni L., Borgianni Y.: "Eco-Design and Sustainable Development: A Speculation About the Need for New Tools and Knowledge", SDM: International Conference on Sustainable Design and Manufacturing (SDM19), Budapest, Hungary, July 4th-5th, 2019. DOI: 10.1007/978-981-13-9271-9_15

B43 Borgianni Y., Maccioni L., Pigozzo D.: "Environmental Lifecycle Hotspots and the Implementation of Eco-design Principles: Does Consistency Pay off?", SDM: International Conference on Sustainable Design and Manufacturing (SDM19), Budapest, Hungary, July 4th-5th, 2019. DOI: 10.1007/978-981-13-9271-9_16

B44 Borgianni Y., Maccioni L., Russo Spina P., Shunmugavel M.K.: "University Education in Additive Manufacturing and the Need to Boost Design Aspects", 22nd International Conference on Engineering Design (ICED19), Delft, The Netherlands, August 5th-8th, 2019. DOI: 10.1017/dsi.2019.67

B45 Borgianni Y., Maccioni L., Orzes G., Basso D.: "How do design changes and the perception of product creativity affect value?". ADM2019 International Conference, Modena, Italy, September 9th-10th, 2019.

B46 Maccioni L., Borgianni Y.: "Investigating the value perception of specific TRIZ solutions aimed to reduce product's environmental impact", 19th ETRIA TRIZ Future Conference, Marrakesh, Morocco, October 9th-11th, 2019.

International Workshops

W1 Becattini N., Borgianni Y., Cascini G., Rotini F.: "Computer-Aided Problem Solving: a dialogue-based system to support the analysis of inventive problems", Sixth TRIZ Symposium in Japan, Kanagawa I. T., Japan, September 9th-11th, 2010.

W2 Borgianni Y., "Assessing the influence of time in transforming customer preferences according to Kano's theory of attractive quality", 18th IIF Workshop "Forecasting New Products and Services: Research and Applications", Milan, Italy, May 12th – 13th, 2016

W3 Annarelli A., Battistella C., Borgianni Y., "Service Added Value Estimate: an original tool for forecasting the value of Product Service Systems", 18th IIF Workshop "Forecasting New Products and Services: Research and Applications", Milan, Italy, May 12th – 13th, 2016

National Workshops (Italy)

W4 Maccioni L., Borgianni Y.: "La sostenibilità come elemento fondamentale di valore nelle fasi preliminari della progettazione" (Sustainability as a fundamental value driver in the early design phases, in Italian), ADM Workshop, Milan, Italy, February 14th-15th, 2017.

W5 Borgianni Y.: "Industria 4.0 nell'immaginario degli studenti di ingegneria (e non solo): quanto pesa nel pensiero creativo" (Industry 4.0 in the imagination of engineering students (and not only): which role it plays within creative thinking, in Italian), ADM Workshop, pisa, Italy, September 14th-15th, 2017.

W6 Maccioni L., Borgianni Y.: "Il successo della progettazione sostenibile: una questione di principio?", (Success in sustainable design: a matter of principle?, in Italian), ADM Workshop, Turin, Italy, February 1st-2nd, 2018

W7 Borgianni Y., Maccioni L.: "Le attività del gruppo ING-IND/15 alla Libera Università di Bolzano", (The activities of the research group belonging to the ING-IND/15 sector at the Free University of Bozen-Bolzano, in Italian), ADM Workshop, Turin, Italy, February 1st-2nd, 2018

Newspaper articles and media

N1 Rauch E., Borgianni Y., Matt D.T., "Im Auge des Betrachters" (In the eyes of the observer, in German), Südtiroler Wirtschaftszeitung, 12/01/2018

Publications about the applicant

The website of the North-West Croatia Regional Energy Agency acknowledges the applicant's relevant contribution provided through his lecture on patent procedures, held in Zagreb on November 26th, 2014, in the framework of the project SMARTinMED (transnational cooperation

Programme MED, funded by the European Union's Regional Development Fund). The link follows (in Croatian):

<http://www.regea.hr/vijesti/smartinmed-%E2%80%93-predstavnicivode%C4%87ih-europskih-klastera-u-posjetu-agenciji.html>

The newspaper "Alto Adige" (edition of March 4th, 2017) has reported about the opportunity offered by the agreement between UNIBZ and the Italian-German Academy of Meran to broadcast the lectures of some courses held within the program "Studium Generale". Among them, the course "Creative thinking and safeguarding inventions" held by the applicant is mentioned. The link of the web edition follows (in Italian):
<http://altoadige.gelocal.it/bolzano/cronaca/2017/03/04/news/all-accademia-italo-tedesca-due-corsi-in-streaming-1.14978916>

Within the TV program "Campus", Rai Südtirol has broadcasted a German-language service about UNIBZ research on eye-tracking, in which the applicant has appeared and has been interviewed. The video is available on UNIBZ Youtube channel:
<https://www.youtube.com/watch?v=LF4tNWEJ2uc>

The applicant has been interviewed during the live program of the Long Night of the Research 2019 broadcasted by Rai Südtirol.

Other academic achievements and awards

The magazine "The European Financial Review" has invited the authors of the book "Re-engineering of Products and Processes - How to achieve global success in the changing marketplace" (indicated above as L1) to provide a summary of its main contents. The corresponding article with the same title of the book has been published in the June-July 2012 issue, pages 21-24. The document is available at
<http://www.europeanfinancialreview.com/?p=1840>

The article "Borgianni Y., Cascini G., Rotini F., Assessing creativity of design projects: criteria for the service engineering field, International Journal of Design Creativity and Innovation, 1(3), 2013, pp. 131-159" has been awarded as distinguished article by the publishing journal for the year 2013

The article "Borgianni Y., Rotini F., Supporting the choice of design alternatives underlying incremental and radical innovations, 13th International Design Conference DESIGN 2014, Dubrovnik, Croatia, May 19th-22nd, 2014" has been awarded as outstanding contribution by the conference scientific committee

The article "Maccioni L., Borgianni Y, Investigating the value perception of specific TRIZ solutions aimed to reduce product's environmental impact, 19th ETRIA TRIZ Future Conference, Marrakesh, Morocco, October 9th-11th, 2019" has received the best paper award by the conference scientific committee

The applicant is qualified for the functions of Associate Professor according to Italian legislation (ASN) in the Competitive Sector 09/A3 "Industrial design, machine construction and metallurgy" (April 2017)

Further data

In the last three years, the applicant has presented the following works (codes refer to the above list of Publications): at international peer-reviewed conferences B25, B26, B28, B31, B32, B33, B34, B35, B36,

B39, B41, B43, B44, B45; at international and national workshops W2, W5.

Entrepreneurship The applicant is member of the Experts' Board of the Centre of competence for Systematic Innovation within Fondazione Politecnico di Milano (Milan, Italy). The scope of the Centre is to offer knowledge on the TRIZ theory and on technological innovation to enterprises, institutions and individuals. With reference to his contribution to the Centre, the applicant has performed various training activities. The most relevant one regards lectures about TRIZ and systematic innovation at Poste Italiane (2012-2013)

Other third-mission activities (disseminations, technology transfer)

- The candidate has been appointed as trainer for topics concerning Intellectual Property procedures in the framework of the project SMARTinMED (transnational cooperation Programme MED, funded by the European Union's Regional Development Fund). The training sessions have taken place in:
 - Zagreb (Croatia), on November 26th, 2014 (in English)
 - Sesto Fiorentino (Italy), on December 19th, 2014 (in Italian).
- The applicant has participated in initiatives aimed at raising interest towards the University world. Main divulgation topics have concerned Reverse Engineering and Rapid Prototyping technologies. Other initiatives (not listed below) targeted the visit of the Mechanical Lab.
 - Internship Week for Highschool Students, 27 October 2017
 - Junior Uni, 30 May 2018
 - „Rendezvous mit dem Traumberuf“, 26 October 2018
 - Long Night of the Research, 2016 and 2019 editions.
- The applicant has held the 4-hour seminar „Introduzione agli strumenti biometrici nell'ingegneria e nella progettazione“ (“Introduction to biometric devices in engineering and design”, in Italian) for PhD students, UNIFI, 21 June 2018, in cooperation with dr. Lorenzo Maccioni.
- The applicant has held the 2-hour seminar „(breve) viaggio alla scoperta dell'eye-tracking“ (“a short journey to discover eye-tracking”, in Italian), for Technical High School students, TFO Max Valier Bolzano, 18 January 2019, in cooperation with dr. Lorenzo Maccioni.
- The applicant has held the course “Creative thinking and safeguarding inventions” for the lifelong learning program Studium Generale at UNIBZ (more details in the Teaching Portfolio).
- Within the project E-EDU 4.0, the applicant is responsible for the organization and teaching of courses and seminars for industries, and High School students and teachers, namely
 - Tools for creative product development, 4 hours
 - 3D CAD Fundamentals, 21 hours
 - 3D Printing and Scanning - overview of technologies, 4 hours.


Language competence

- Italian, mother tongue
- English C1, Cambridge English - Advanced Certificate (achieved in 2015) and UNIBZ internal exam (passed in June 2017)
- German C1, Goethe Zertifikat (achieved in 2016)
- Slovenian B1 (self-assessed)

The applicant has achieved the South Tyrolean Bilingualism (Italian-German) A Certificate, valid for the Province of Bolzano, South Tyrol – CEFR C1

Bolzano, October 21st, 2019

Signature

A handwritten signature in black ink, appearing to read 'J. Bergner', written in a cursive style.

Attachments
Teaching Portfolio

Teaching Portfolio

1. Teaching Statement

The applicant believes that teaching and research are strongly intertwined. This holds especially for University teaching, for which updated knowledge has to be channeled. Indeed, the applicant is used to changing the contents of my teaching material every year irrespective of students' evaluations.

As a result, the academic teaching experience has resulted as a means to deliver important findings achieved in the research activity and verify how these could be effectively exploited by students to strengthen their engineering practice. In particular, such a knowledge transfer has taken place within product development, decision-making tools and design creativity.

Whenever the applicant has been entrusted to teach new courses compliant with his scientific discipline, but not directly concerning his primary research activity, the first step has consisted in individuating the most recent books, technical standards, Internet materials and scientific publications as a base for offering updated knowledge and original syllabi. For instance, this can be claimed for subjects such as technical drawing (and their differences among diverse countries), applications of Reverse Engineering tools, Design for Additive Manufacturing and patent regulations.

Besides the relationship between teaching and research, additional aspects feature the applicant's teaching style and the measures taken to facilitate learning.

At first, the applicant aims to involve students during class; for instance, some slides that summarize lectures' contents are initially incomplete and the applicant asks for students' assistance to fill them up before uploading them or making them available. In addition, the candidate always strives to exploit multimedia material in order to use different forms that can facilitate understanding and avoid boredom. Laboratory experiments, hands-on activities and practical exercises are considered as critical for learning. The invitation of experts from industry and academia, as well as visits to companies are regularly scheduled. Those have involved so far the companies Microtec, 3DW and Alupress in South Tyrol. New teaching methods are taken into account. A pilot experiment has foreseen the audio recording of the lectures of Reverse Engineering and Rapid Prototyping (Academic Year 2018-19).

Whenever possible, the applicant employs material that can be freely used, modified and redistributed. The candidate commonly makes use of computer platforms on which teaching material (slides/notes illustrated during lectures and additional sources) is uploaded. Among additional sources targeting the improvement of students' experience, the applicant has created lists of relevant technical terms in different languages, as he is used to dealing with students with different mother tongues, which, on their turn, often differ from the course's official language. The same platforms are used to post messages and open forums, in which students' participation is encouraged.

2. University Courses in which the applicant has contributed as teaching assistant

Course Name	Language	University and Faculty	Program	Appointee(s)	Academic Years
Methods and tools for product innovation	Italian	University of Florence, Faculty (School) of Engineering	M.Sc. in Mechanical Engineering, Energy Engineering	Dr. Gaetano Cascini	From 2005/06 to 2008/09

			and Management Engineering		
Knowledge Management and Intellectual Property	Italian	University of Florence, Faculty (School) of Engineering	M.Sc. in Mechanical Engineering, Energy Engineering and Management Engineering	Dr. Gaetano Cascini	From 2005/06 to 2008/09
Development of engineering products	Italian	University of Florence, Faculty (School) of Engineering	M.Sc. in Mechanical Engineering	Dr. Federico Rotini	From 2009/10 to 2014/15
Methods and tools for innovation	Italian	University of Florence, Faculty (School) of Engineering	M.Sc. in Mechanical Engineering, Energy Engineering and Management Engineering	Dr. Gaetano Cascini, Dr. Federico Rotini, Prof. Paolo Rissone	From 2009/10 to 2013/14

3. Appointed University Courses

Course Name	Language	University and Faculty	Program	Academic Years	Notes
Creativity in engineering design and inventive problem solving	Italian	Free University of Bozen-Bolzano, Faculty of Science and Technology	B.Sc. in Industrial and Mechanical Engineering	2014/15	
Technical drawing and industrial engineering methods	Italian (first year), English (subsequent years)	Free University of Bozen-Bolzano, Faculty of Science and Technology	B.Sc. in Industrial and Mechanical Engineering	From 2015/16	
Reverse Engineering and Rapid Prototyping	English	Free University of Bozen-Bolzano, Faculty of Science and Technology	M.Sc. in Industrial Mechanical Engineering	From 2016/17	First year in cooperation with Dr. Pasquale Russo Spena
Creative thinking and safeguarding inventions	Italian	Free University of Bozen-Bolzano	Studium Generale	From 2016/17 to 2018/19	
Technical	English	Free University	B.Sc. in Wood	From 2018/19	In cooperation

drawing and CAD		of Bozen-Bolzano, Faculty of Science and Technology	Engineering		with an additional lecturer
Fundamentals of CAD	English	Free University of Bozen-Bolzano, Faculty of Science and Technology	B.Sc. in Industrial and Mechanical Engineering	From 2018/19	In cooperation with an additional lecturer

As for the above listed courses, the responsibilities include, beyond the preparation of lectures and materials, the organization of exam sessions and the evaluation of students. In addition, all the syllabi of these courses are compliant with Dublin Descriptors.

4. Other relevant teaching activities

The applicant has acted as lecturer and tutor for the 2018 and 2019 Spring Schools "Design Methods and Processes", Alta Scuola Politecnica (ASP), joint initiative of Politecnico di Milano and Politecnico di Torino (coordinator Prof. Gaetano Cascini); both editions have taken place in Loano (SV), Italy.

5. Supervisory Teaching and Mentoring

- *Postgraduate supervision (PhD level)*

The applicant is currently supervising the PhD student Lorenzo Maccioni, who has been attending the PhD course "Sustainability Energy and Technologies" at the Free University of Bozen-Bolzano since November 2016. The provisional title of the thesis is "Sustainability as a fundamental value driver in the early design phases"

- *Supervision (M.Sc. level)*

The applicant has worked as co-supervisor of 5 students for their thesis, M.Sc. in Mechanical Engineering, University of Florence (from the Academic Year 2005/06 to 2010/11). At UNIBZ, M.Sc. in Industrial Mechanical Engineering, the supervision has taken place for 3 students (1 thesis completed, 2 in progress, out of which one as co-supervisor)

The applicant has supervised or co-supervised 6 students in their Project Work for the M.Sc. in Industrial Mechanical Engineering at UNIBZ (3 project works completed, 3 in progress).

- *Supervision (B.Sc. level)*

At UNIBZ, B.Sc. in Industrial and Mechanical Engineering, the supervision for the thesis has taken place for 5 students (2 theses completed, 2 in progress)

At UNIBZ, B.Sc. in Industrial and Mechanical Engineering, the applicant has served as academic supervisor for the internships of 7 students.

- *Tutoring*

The applicant is appointed tutor for students attending the B.Sc. in Industrial and Mechanical Engineering and the M.Sc. course in Industrial Mechanical Engineering, UNIBZ.

6. Courses and Self-instructional Activities Taken to Improve Teaching Skills

- “Academic Teaching Excellence” held by the British Council at the Free University of Bozen-Bolzano (September 28th – October 2nd, 2015) aimed to support lecturers in the use of the English language as a means of instruction and deal with students with manifold backgrounds
- MOOC “Using Open Educational Resources in Teaching”, organized by Politecnico di Milano, aimed to familiarize lecturers with the opportunities and advantages offered by Open Educational Resources.
- Various courses organized by the Free University of Bozen-Bolzano aimed to improve lecturers’ knowledge about ongoing changes in teaching. For instance, attended courses regard copyrights and docimology.
- Various language courses (English, German) offered by the Language Centre of the Free University of Bozen-Bolzano, whose attendance has targeted, among the others, the enhancement of the applicant’s capability of teaching and communicating with students. In particular, one of the courses was “English for Academic Purposes” (C1 level).