

University Academic Curriculum Vitae

Personal information Name: Cristian Cappellini
Nationality: Italian

- Education since leaving school**
- September 1999 - March 2006. First degree in Mechanical Engineering, Machine Design Curricula. Thesis title "The ABS brakes: typologies and control algorithms". University of the Studies of Brescia.
 - March 2006 – November 2008. Bachelor in Mechanical Engineering, Machine Design Curricula. Thesis title "Design and development of a force acquisition system for turning processes". University of the Studies of Brescia.
 - November 2008 – October 2011. Research Doctorate (PhD) title. Scientific disciplinary sector ING-IND/16 "Technologies and energetic systems for the industry". Thesis title "Experimental and Finite Element Analysis of Machining Processes". University of the Studies of Brescia.
 - November 2011 – May 2012. Post-doctorate research activity in biomedical devices production field. RUTGERS The State University of New Jersey.

- Present appointment**
- Title of appointment: Junior University Researcher with fixed-term contract
 - Start of appointment: October the 1st 2020
 - Level of appointment (in national/international context): PhD level
 - Employer: Free University of Bozen-Bolzano 1, Piazza Università, 39100 Bolzano, Italy
 - Responsibilities:
 - Optimization and development of non-conventional manufacturing processes and systems for small and medium-sized enterprises using digital and intelligent industry 4.0 technologies.
 - Teacher of the course "Manufacturing technology" for bachelor industrial mechanical engineering programme L-9.
 - Teacher for the course "Advanced Manufacturing Technologies and Systems" for master industrial mechanical engineering programme LM-33.
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Professional experience Chronological list of all previous employments

- Title of appointment: Service and support engineer
- Start of appointment: February the 1st 2017
- Level of appointment (in national/international context): Employee in an international company
- Employer: Ecotre Valente Srl. 145, Via S. Orsola, 25135 Brescia (BS), Italy
- Responsibilities:

Customer assistance: support in the selection and in the customization of the simulation and analysis software; design and creation of training paths for commercial and academic users.

Technical support: consultancy, even remotely, in the resolution of problems and issues in the software installation and use; creation of custom alternative models for the resolution of the presented problems.

Research: practical research activity on non-conventional manufacturing process, with particular focus on light weight alloy wheels flow-forming, metallic materials heat treatment.

Training: preparation and performing of training courses from both, customer requests (customized on the specifications as introduction, implementation and improving to possible software uses), or commercial and marketing intents; training follow-up to check attendees status.

Dissemination: introductory or thematic seminars with presentation of the product, conferences and fairs.

Sale, maintenance, implementation, support, training and general customer services for finite element method analysis software SFTC DEFORM, ESI ProCAST and ESI QuikCAST. Training and consultancy on industrial production processes (forging, rolling, cutting, deep drawing, heat treatment, casting). Vacuum systems, washing systems and automation.

From Academic year 2016 until today.

Job title: Didactic support activity as Teaching assistant for manufacturing technology.

Level of appointment: collaborator of national university.

Employer: University of the Studies of Brescia. 38, Via Branze, 25123 Brescia (BS), Italy.

Responsibilities: Teaching assistant for "Manufacturing technologies" course for Mechanical and Material Engineering Programme.

Classroom tutoring during theoretical and exercise classes.

Discussion and deepening with the students concerning the found problems with the identification of the optimal solutions. Promotion of lectures and seminars on the simulation of manufacturing processes. Preparation of the exams relating to the course and subsequent evaluation of the learned theoretical knowledge and of the resolution of the proposed exercises.

From July the 1st 2012 to January the 31st 2017.

Job title: Customer sales representative.

Level of appointment: Employee in an international company.

Employer: COMSOL Multiphysics Srl. 103, Viale Duca degli Abruzzi, 25124 Brescia (BS), Italy.

Responsibilities:

Sale: finding and maintaining contacts; customer visits; management and negotiation of purchase offers.

Customer assistance: support in choosing and customizing the software; design and implementation of training courses, for both business and academic users.

Technical support: consultancy, even remotely, in solving problems during the installation and use of the product; preparation of alternative models for solving the presented problem.

Training: preparation and delivery of interventions and training

courses, both on request (aimed at satisfying specific requests, such as introduction, implementation and enhancement with respect to the possible uses of the software), and for commercial-informative purposes; training follow-up.

Dissemination: seminars (introductory or thematic) to present the product; workshops at headquarters and external; online workshop; conference and fairs.

Experience in academic teaching

- Title of “Teaching assistant” since May 2012.
Theoretical and exercise classes, didactic support to students, support during examinations, evaluation of student knowledge for “Manufacturing Technologies” course for Mechanical and Material Engineering under-graduate students at University of Brescia in 2016-2017 for a total amount of hours of 60.
Theoretical and exercise classes, didactic support to students, support during examinations, evaluation of student knowledge for “Manufacturing Technologies” course for Mechanical and Material Engineering under-graduate students at University of Brescia in 2017-2018 for a total amount of hours of 60.
Theoretical and exercise classes, didactic support to students, support during examinations, evaluation of student knowledge for “Manufacturing Technologies” course for Mechanical and Material Engineering under-graduate students at University of Brescia in 2018-2019 for a total amount of hours of 52.
Theoretical and exercise classes, didactic support to students, support during examinations, evaluation of student knowledge for “Manufacturing Technologies” course for Mechanical and Material Engineering under-graduate students at University of Brescia in 2019-2020 for a total amount of hours of 60.
- Summary of significant personal achievements in teaching:
Good communicational skills (students support, seminars, classes), good ability to work in group (team planning and problem solving), good ability in dealing (students tutoring), good availability to people hearing (personal empath ability), good ability to face to face classes.
- Student supervision: From November 2008 to October 2011, correlator of 5 works of thesis in the cutting field. The coordinate activities were the planning and the realization of: specimens preparation, machining tests performing, tool wear individuation and measurements, tool wear data analysis, tool wear models hypothesis and validation by response surface methodology, artificial neural networks and FEM simulations.

Other academic responsibilities

- internal appointments to faculty and university boards
Classes and support during examination for “Industrial Management of Quality” course for Management Engineering Programme in academic year 2009-2010. Total amount of hours: 25.
Classes and support during examination for “Plasticity and plastic deformation processes A” course for Mechanical Engineering Programme in academic year 2009-2010. Total amount of hours: 25.

Classes and support during examination for “Industrial Management of Quality” courses for Management Engineering Programme in academic year 2010-2011. Total amount of hours 25.

Classes and support during examination for “Manufacturing Technology” courses for Management Engineering Programme in academic year 2010-2011. Total amount of hours 25.

Classes for “Industrial Drawing” course for Mechanical Engineering Programme in academic year 2010-2011. Total amount of hour: 25.

From November 2008 to October 2011, participation to the manufacturing technology research group of University of Brescia, 9 people, under the supervision of the Prof. Elisabetta Ceretti.

Research activity on manufacturing technology, metal machining, manufacturing programming and control, industrial quality management.

From November 2008 to October 2011, participation to the manufacturing technology research group of University of Bergamo, 4 people, under the supervision of the Prof. Claudio Giardini.

Research activity on manufacturing technology, metal machining, manufacturing programming and control, industrial quality management.

From April 2010 to December 2010, participation to the CIRP Benchmark Evaluation of Predictive Models for Surface Integrity by performing machining simulations. The benchmark was coordinated by Prof. José Carlos Outeiro of Catholic University of Portugal.

From November 2011 to May 2012, participation to the IREBID project on manufacturing and optimization of biomedical devices with the industrial and system engineering research group in Rutgers The State University of New Jersey, 9 people, under the supervision of the Prof. Tugrul Ozel. Research activity on biomedical devices production and optimization, metal machining of biocompatible alloys, manufacturing programming and control, biomedical devices prototyping planning, machining simulations.

April 15th – 17th 2009, training at AITeM. (Manufacturing Technologies Italian Association) school in the “Methods and tools for metallic sheet forming operations design” course at Polytechnic University of Marche.

June 13th – 22nd 2011, training at IREBID summer school, in biomedical manufacturing at University of Brescia.

- external appointments at national and international level
October 2nd, 3rd, 9th and 10th 2019, training in the “Open die forging” course organized by AIM (Metallurgy Italian Association) in Treviglio (BG), Mairano (BS) at Franchini Acciai, and Mantova at Belleli Energy Cpe.
September 16th and 17th 2019, training in the “Additive Metallurgy: metal materials and additive manufacturing” course organized by AIM (Metallurgy Italian Association) at Polytechnic of Milan.
- Speaker at ESAFORM 2010 international conference on material forming, with a paper on hard cutting. 7-9 April 2010.
- Speaker at CIRP-ICME 2010 international conference on intelligent computation in manufacturing engineering, with a paper on neural networks. 23-25 June 2010.
- Speaker at WMMES 2021 World Symposium on Mechanical - Materials Engineering and Science, with the paper “FEM modeling of tool wear in hard turning operations” that had received the best paper award.

Memberships

From April 2017, member and active participant of AIM (Metallurgy Italian Association) in the Plastic Deformation technical committee. Member of Italian Manufacturing Technology Association (AITeM).

Research and scholarships

- Summary of current research:
From October 2017 until today, research and practical experience in the design of heat treatment cycles for metallic alloys, with ability to develop and verify the cycles with FEM simulation to forecast metallurgical phases, residual stresses, hardness, quenching thickness.
From June 2019 until today, research and practical experience in the design and optimization of the production cycle of non-conventional Nickel alloys components for radiant tubes in CAL and CGL systems. Coordinator of the research group of 4 members.
- Summary of research during the previous five years:
From September 2018 to September 2019, research and practical experience in the design and optimization of flow-forming processes in the wheel production industry. Design and optimization were evaluated also with the help of FEM simulations for forces and torque estimation. Coordinator of the research group of 4 members.
- Summary of older research and scholarship:
From November 2008 to October 2011, coordinator of the research group working on tool wear and failure of circular saws for steels and stainless steels.
- Summary of significant achievements in research and scholarship:
Design and planning of manufacturing production processes, industrial quality management, DoE, FMEA, response surface methodology, data analytics, good ability to work under stress conditions (difficult customer relationships, research announcement participation), fair ability in the group project coordination (professional experience and academic research experience), good ability in using numerical control machines (CN), good ability in using manual lathes, milling and drilling machines, good ability in using coordinate-measuring machines (CMM) and optical machines, good knowledge of elaborators, good knowledge of Windows OS, Microsoft Office, AutoCAD, Algor FEA, DEFORM 2D and 3D, Matlab, Wolfram Mathematica, Labview, Minitab, COMSOL Multiphysics, Fluent, Gambit, SolidWorks, JMatPro, GOM Inspect, LaTeX softwares.

Publications

- Scopus author details:
Documents by author 8
Total citations 277
h-index 5
- Conference papers
(*) C. Cappellini, A. Attanasio, G. Rotella, D. Umbrello; Formation of white and dark layers in hard cutting: influence of tool wear. ESAFORM 2010, 7-9 April 2010.
(*) A. Attanasio, C. Cappellini, E. Ceretti, C. Giardini; Tool wear

evaluation by means of artificial neural networks in turning. CIRP-ICME 2010, 23-25 June 2010.

(*) A. Attanasio, C. Cappellini, S. Caruso, G. Rotella, D. Umbrello, R. M'Saoubi; Tool wear influence on white and dark layers in hard steel turning. ICTMP 2010, 13-15 June 2010.

(*) A. Attanasio, E. Ceretti, C. Cappellini, C. Giardini; Residual stress prediction by means of 3D FEM simulation. CIRP Conference on Modelling of Machining Operations 2011, 12-13 May 2011.

(*) A. Attanasio, E. Ceretti, C. Cappellini, C. Giardini, G. Poulachon; Algorithm for tool geometry updating in 3D FEM environment considering the tool wear. NAMRC40 2012, 4-8 June 2012.

(*) A. Abeni, C. Cappellini, A. Attanasio; Finite element simulation of tool wear in machining of nickel-chromiumbased superalloy. ESAFORM 2021, 14-16 April 2021.

(*) C. Cappellini, F. Concli; FEM modeling of tool wear in hard turning operations. WMMES 2021, 9-11 September 2021.

- Journal articles in refereed academic journals

(*) A. Attanasio, E. Ceretti, A. Fiorentino, C. Cappellini, C. Giardini; Investigation and FEM-based simulation of tool wear in turning operations with uncoated carbide tools. Wear 2010, DOI: 10.1016/j.wear.2010.04.013

(*) A. Attanasio, D. Umbrello, C. Cappellini, G. Rotella, R. M'Saoubi; Tool wear effects on white and dark layer formation in hard turning of AISI 52100 steel. Wear 2012, DOI: 10.1016/j.wear.2011.07.001

(*) A. Attanasio, E. Ceretti, C. Giardini, C. Cappellini; Tool wear in cutting operations: experimental analysis and analytical models. Journal of Manufacturing Science and Engineering 2013, DOI: 10.1115/1.4025010

(*) P.J. Arrazola, A. Kortabarria, A. Madariaga, J.A. Esnaola, E. Fernandez, C. Cappellini, D. Ulutan, T. Ozel; On the machining induced residual stresses in IN718 nickel-based alloy: Experimental and predictions with finite element simulation. Simulation Modelling Practice and Theory 2014, 10.1016/j.simpat.2013.11.009

Language competence

Mother tongue: ITALIAN

Other language: ENGLISH

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2

Written and spoken competence in all languages according to CERF levels, Common European Reference Framework (http://www.coe.int/t/dg4/linguistic/cadre1_en.asp); append certificates wherever available

Date
10/08/2021

Signature