Europass Curriculum Vitae

Personal information

Surname(s) / First name(s)	**Cordella Francesca**
Address(es)	**, ***, 80100, Naples, Italy
Telephone(s)	***** Mobile: *****
Email(s)	francesca.cordella@unina.it
Nationality(-ies)	Italian
Date of birth	March 27, 1979

Current employment

Research fellow at the University of Naples Federico II, Computer Science and Automation Department

Education and training

2008—2011 Doctor of Philosophy in Computer Science and Automation Engineering, received by the University of Naples Federico II

- Thesis title: Grasping algorithms for anthropomorphic robotic hands
- Thesis topics: study of the human hand behavior by different motion analysis systems in order to find general rules applied for the implementation of reduced computational cost grasping algorithms for anthropomorphic robotic hand.

2008 State certification in order to practice as an engineer

a.a. 2006-2007 Electronic Engineering degree at the University of Naples Federico II

- Thesis in Robotics: Technologies for the simulation of laparoscopic surgery
- Mark: 110/110
- Thesis topics: state of the art of minimally invasive surgery techniques, implementation of an haptic device control system, generation of a human organ model by using Comsol Multiphysics software environment

1997 High school degree (Diploma di maturità classica), mark 50/60, at the liceo Classico 'Jacopo Sannazzaro' of Naples

Previous experiences

March—September 2008 Collaboration contract with the Department of Computer Science and Automation of the University of Naples Federico II for the European Project DEXMART (DEXterous and autonomous dual-arm/hand robotic manipulation with sMART sensory-motor skills: A bridge from natural to artificial cognition)

Foreign experiences

January—July 2011

Visiting student at the Institut für Robotik und Mechatronik, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Wessling, Germany under the supervision of Dott. van der Smagt, where she worked on the analysis of human behavior during grasping with the Vicon system and on the implementation of tracking algorithm for human hand movement using the Kinect motion sensing device

Personal skills and competences

Programming in:

- C
- C++
- Matlab and Simulink
- Assembly (Motorola 68x family)
- Basic knowledge of SQL
- Comsol Multiphysics 3.2
- OpenCV
- SW for the management of motion analysis systems: Vicon Nexus, Vicon IQ, SMART analyzer for BTS

Participation in drafting of European Projects, PON, FIRB

Reviewer for International Conferences ICABB, ICRA, IROS, SYROCO

Co-supervisor of Master thesis

Mother tongue(s) **Italian**

Other language

English

Self-assessment
European level(*)

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
English				
B2 Independent user	B2 Independent user	B2 Independent user	B2 Independent user	C1 Proficient user

(*) *Common European Framework of Reference (CEF) level*

Research activities

The Francesca Cordella's research activities include the study, by means of different motion analysis systems (Vicon, BTS, CyberGlove, Kinect), of the grasping action performed by the human beings; the analysis of the human hand anatomy and of its behavior in order to acquire better knowledge on the hand kinematics; the implementation of hand kinematic models which respect the human hand characteristics; the development of reduced computational cost bio-inspired grasping algorithms for robotic hands; the design of human-like robotic hands endowed with high dexterity; the design of upper-limb rehabilitation robotic devices. One of the main applications of her work is in assistive robotics, with special reference to upper limb prostheses and rehabilitation devices where the human-robot interaction is essential. For this reason, her research interests regard also the implementation of tracking algorithms for human pose estimation in order to study the human behavior and to guarantee the safety of human-robot interaction. Such algorithms can be used to detect and avoid possible collisions between humans and robots.

Publications

International Journal Papers

F. Cordella, L. Zollo, E. Guglielmelli, B. Siciliano, "A bio-inspired grasp optimization algorithm for an anthropomorphic robotic hand", Thematic Issue of International Journal of Interactive Design and Manufacturing (IJIDeM), 2012

International Conference Papers

F. Cordella, L. Zollo, A. Salerno, E. Guglielmelli, B. Siciliano, "Validation of a power grasping algorithm for an anthropomorphic robotic hand on the basis of human grasping action" Advances in Robot Kinematics (ARK), 2012 (submitted)

F. Cordella, F. Di Corato, L. Zollo, B. Siciliano, P. van der Smagt, "Patient performance evaluation using Kinect and Monte Carlo-based finger tracking" IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob), 2012 (submitted)

F. Cordella, L. Zollo, A. Salerno, E. Guglielmelli, B. Siciliano, "Experimental validation of a reach-and-grasp optimization algorithm inspired to human arm-hand control" IEEE International Conference on Engineering in Medicine and Biology Society (EMBC), 2011

F. Cordella, L. Zollo, E. Guglielmelli, B. Siciliano, "An approach for optimal grasp determination and finger trajectory planning of a robotic hand by imitating human behavior", 1th International Conference on Applied Bionics and Biomechanics (ICABB), 2010

F. Cordella, L. Zollo, E. Guglielmelli, B. Siciliano, "A bio-inspired strategy for optimal grasp of an anthropomorphic robotic hand", ViRtual environments and prototyping for huMAN health and safety, special track of 9th International Conference IDMME – Virtual Concept, 2010

Invited seminars

2007 — *Simulatori per la chirurgia laparoscopica – Stato dell'arte*, Internal Seminar, Città della scienza, Naples

Attended courses

11—16 July 2011 — "Distributed optimization and game theory" and "Predictive control" — Doctorate School SIDRA "Antonio Ruberti", Bertinoro

7 June—5 July 2010 — "Characterization of security systems based on biometric technologies" — Doctorate School in Ingegneria dell'Informazione of the University of Naples Federico II, Naples

12—17 July 2010 — "Robotics" — Doctorate School SIDRA "Antonio Ruberti", Bertinoro

22—26 February 2010 — Doctorate School in Ingegneria dell'Informazione, University of Naples Federico II

20—22 October 2010 — ViRtual environments and prototyping for huMAN health and safety, special track of 9th International Conference IDMME – Virtual Concept, Bordeaux (Francia) (participation as speaker)

14—16 October 2010 — 1th International Conference on Applied Bionics and Biomechanics, Venice (participation as speaker)

13—15 December 2010 — Workshop "Medicine meets virtual reality", Scuola Superiore Sant'Anna, Pisa

2010 — "Optimization and optimal control" by Prof. F. Garofalo — Master degree in Ingegneria dell'Automazione, University of Naples Federico II

2010 — "Mechanical robots" by Prof. S. Rossi — Master degree in Ingegneria dell'Automazione, University of Naples Federico II

13—18 July 2009 — "Lyapunov techniques for constrained and robust control of dynamical systems" — Doctorate School SIDRA "Antonio Ruberti", Bertinoro

9—10 July 2009	“Microsensors, microtechnology and the road to nanotechnology” — Doctorate School in Ingegneria Elettronica e delle Telecomunicazioni of University of Naples Federico II, Napoli
16—20 February 2009	Doctorate School in Ingegneria dell’Informazione, University of Naples Federico II
2009	“Robust control” by Prof. A. Pironti — Master degree in Ingegneria dell’Automazione, University of Naples Federico II
2009	“Real-time systems for control” by Prof. A. Pironti — Master degree in Ingegneria dell’Automazione, University of Naples Federico II
2009	“Non linear control” by Prof. M. Di Bernardo — Master degree in Ingegneria dell’Automazione, University of Naples Federico II
June—July 2008	“Pattern Recognition”, University of Naples Federico II
24 October 2008	Workshop “Human-friendly robotics”, Naples
31 October 2008	Workshop “Medicine meets virtual reality”, University of Rome Tor Vergata
2008	“Robot control” by Prof. B. Siciliano — Master degree in Ingegneria dell’Automazione, University of Naples Federico II
2008	“Advanced robotics” by Prof. B. Siciliano — Master degree in Ingegneria dell’Automazione, University of Naples Federico II
10 April 2007	Tutorial “Computer Integrated Surgery” , Rome, International Conference on Robotics and Automation (ICRA)
8—12 October 2007	PhD School in “Virtual Reality Design and Application in Haptics”, Siena

Further information

Skills of working autonomously and in group

Propensity to theoretical and applied research

Trattamento Dati Personali

La sottoscritta Francesca Cordella, è a conoscenza che, ai sensi dell’art. 26 della legge 15/68, le dichiarazioni mendaci, la falsità negli atti e l’uso di atti falsi sono puniti ai sensi del codice penale e delle leggi speciali. Inoltre, la sottoscitta, ai sensi della legge 675/96 (tutela delle persone e di altri soggetti rispetto al trattamento dei dati personali) e dell’art. 13 del D.Lgs 30 giugno 2003 n. 196, AUTORIZZA al trattamento dei dati personali contenuti nel presente curriculum.