PhD Programme in electronic and computer engineering in collaboration with - Southwest Jiaotong University - Xidian University Curriculum 1: COMPUTER ENGINEERING AND AUTOMATIC CONTROL Curriculum 2: ELECTRONICS AND TELECOMMUNICATIONS	
DISCIPLINARY SCIENTIFIC AREA	09 - INDUSTRIAL AND INFORMATION ENGINEERING
COORDINATOR	PROF. ALESSANDRO GIUA
HEAD DEPARTMENT	DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING
DURATION	3 years
LEARNING OUTCOMES AND RESEARCH TOPICS	The PhD programme in Electronic and Computer Engineering aims to train young researchers to make them ready to carry out academic and industrial research projects in the following areas: 1. Automatic Control and Systems Engineering 2. Telecommunications 3. Electromagnetism 4. Electrical Circuits and Modelling 5. Industrial Electronics Power 6. Computer Engineering 7. Microelectronics 8. Electrical and Electronic Measurements The central point of the doctoral education is the development of an original research project to be carried out in close contact with the supervisor and strongly aimed to the advancement of knowledge in the relevant field of engineering. The main goal of the PhD programme is to create professionals who find suitable job placement at academic institutions, research centres, high-tech firms, and that they are potentially able to initiate economic undertaken with high scientific and technological content.
ELIGIBILITY AND OTHER REQUIREMENTS FOR CANDIDATES	EVERY ITALIAN 2ND CYCLE DEGREE (*LAUREA MAGISTRALE/SPECIALISTICA/VECCHIO ORDINAMENTO*) AND EQUIVALENT AND SUITABLE FOREIGN ACADEMIC DEGREES
ADMISSION TESTS	ASSESSMENT OF QUALIFICATIONS AND CURRICULUM VITAE, INTERVIEW The interview will aim to ascertain the candidate's ability to orient on the main areas of study inherent in the doctorate and to verify his/her analytical, processing and communication skills. During the interview, a three-year research project proposed by the candidate will be discussed, which must be presented, in addition to the documents required by art. 3 of the call for applications (Annex A "Titoli valutabili e Curriculum Vitae'; Annex B 'Dichiarazione sostitutiva di certificazioni del/i titolo/i di accesso con esami e voti'; two-sided coloured scanned copy of a valid ID, with a clear photo), by uploading it to the system by the call expiry date (file name: research_project_surname_name). Candidates unable, for justified reasons, to take the interview at the established venue, may be granted the possibility of carrying it out by videoconference, on the same date and time established for face-to-face interviews, according to the procedure indicated in the notice of competition.
ADMISSION TESTS FOR	ASSESSMENT OF QUALIFICATIONS AND CV, AND VIDEO CONFERENCE

FOREIGN CANDIDATES APPLYING FOR RESERVED POSITIONS SUPPORTED BY A SCHOLARSHIP	INTERVIEW During the interview, a three-year research project proposed by the candidate will be discussed, which must be presented, in addition to the documents required by art. 3 of the competition announcement (certificate attesting the award of a 2nd level foreign degree needed to access a PhD programme, including exams and marks, with a translation in Italian or English; certificate attesting the award of a 1st level foreign degree, including exams and marks, with a translation in Italian or English; signed Curriculum Vitae preferably in EU format, in English or Italian; additional qualifications, certifications, publications; copy of a valid passport), by uploading it to the system, by the expiry date of the announcement (file name: research_project_surname_name).The interview can also be conducted in English. Reference letters (up to 3) must be written in English, using the form available on the webpage https://unica.it/dottoratiricerca (How to apply for PhD selection: Guidelines and forms- Annex D), by a university professor or an expert in the research fields of the PhD programme, on letterhead of their institution, dated and signed. Evaluators will send their letters directly to the email address phdcall_referenceletter@unica.it (object: surname and name of the candidate being evaluated and name of the PhD programme for which he/she is applying).
POSITIONS	22 (1 of which, with scholarship, reserved for a foreign candidate with a foreign degree)
SCHOLARSHIPS	19: 1 funded by UniCa; 4 funded by Ministerial Deecree no. 118/2023: 1 NRRP Research, 2 Public Administration, 1 Digital and Environmental Transitions; 13 funded by Ministerial Deecree no. 117/2023; 1 funded by an external institution: Department of Electric and Electronic Engineering - funds from BioMed project
POSITIONS WITHOUT SCHOLARSHIP	3
CONTACT PERSON	PROF. ALESSANDRO GIUA EMAIL: giua@unica.it - TEL. +39 0706755751
WEBSITE	https://www.alessandro-giua.it/DRIEI/

SCHOLARSHIPS FUNDED BY MINISTERIAL DECREE NO. 118/2023	
SCHOLARSHIP 1	
TYPOLOGY	NRRP Research
RESEARCH PROJECT	Innovative solutions of information engineering for scientific and technological applications
PRINCIPAL INVESTIGATOR	Prof. Alessandro Giua
DESCRIPTION OF DOCTORAL TRAINING	The activity will consist in the development of an original research project that is consistent with the missions of the NRRP as indicated above, through approaches characterizing one of the scientific areas pertaining to the doctorate, namely: • Automatic (ING-INF/04) • Bioengineering (ING-INF/06) • Electromagnetic fields (ING-INF/02) • Converters, machines and electric drives (ING-IND/32) • Electronics (ING-INF/01) • Electrical engineering (ING-IND/31) • Electrical and Electronic Measurements (ING-INF/07) • Information processing systems (ING-INF/05) • Telecommunications (ING-INF/03) During the three-year period, training will be completed through periods of study and research in companies or research centres, periods of study and research abroad, passing advanced courses, and publishing and presenting the

	results obtained in international forums.
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIPS 2 and 3	
TYPOLOGY	Public Administration
RESEARCH PROJECT	Optimization, digitalization and orchestration of decision-making processes and services in the Public Administration
PRINCIPAL INVESTIGATOR	Prof. Alessandro Giua
DESCRIPTION OF DOCTORAL TRAINING	The activity will consist in the development of an original research project that is consistent with the missions of the NRRP as indicated above, through approaches characterizing one of the scientific areas pertaining to the doctorate, namely: • Automatic (ING-INF/04) • Bioengineering (ING-INF/06) • Electromagnetic fields (ING-INF/02) • Converters, machines and electric drives (ING-IND/32) • Electronics (ING-INF/01) • Electrical engineering (ING-IND/31) • Electrical and Electronic Measurements (ING-INF/07) • Information processing systems (ING-INF/05) • Telecommunications (ING-INF/03) During the three-year period, training will be completed through periods of study and research in companies or research centres, periods of study and research abroad, passing advanced courses, and publishing and presenting the results obtained in international forums.
COMPANY/RESEARCH INSTITUTION/PUBLIC ADMINISTRATION	The company/research institution/public administration where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION/PUBLIC ADMINISTRATION	6
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 4	
TYPOLOGY	Digital and Environmental Transitions
RESEARCH PROJECT	Innovative information engineering technologies for the enabling of digital and environmental transitions
PRINCIPAL INVESTIGATOR	Prof. Alessandro Giua
DESCRIPTION OF DOCTORAL TRAINING	The activity will consist in the development of an original research project that is consistent with the missions of the NRRP as indicated above, through approaches characterizing one of the scientific areas pertaining to the doctorate, namely: • Automatic (ING-INF/04) • Bioengineering (ING-INF/06) • Electromagnetic fields (ING-INF/02) • Converters, machines and electric drives (ING-IND/32) • Electronics (ING-INF/01) • Electrical engineering (ING-IND/31)

	• Electrical and Electronic Measurements (ING-INF/07) • Information processing systems (ING-INF/05) • Telecommunications (ING-INF/03) During the three-year period, training will be completed through periods of study and research in companies or research centres, periods of study and research abroad, passing advanced courses, and publishing and presenting the results obtained in international forums.
COMPANY/RESEARCH INSTITUTION/PUBLIC ADMINISTRATION	The company/research institution/public administration where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION/PUBLIC ADMINISTRATION	6
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIPS FUNDED BY MINISTERIAL DECREE NO. 117/2023	
SCHOLARSHIP 1	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Development of a sensorized system for perfusion of organs for transplant
PRINCIPAL INVESTIGATORS	Prof. Massimo Barbaro
DESCRIPTION OF DOCTORAL TRAINING	The training activities, as part of the doctoral course, include an in-depth study of the design and development techniques of highly complex electronic systems. In particular, in-depth study on the design of microelectronic circuits and new technologies for the production of miniaturized devices such as MEMS (micro electro-mechanical systems). Also, in-depth study of the use of sensors based on integrated and miniaturized volammetry and signal processing and artificial intelligence techniques for data classification and identification of alarm thresholds. In addition to the technological training, training activities relating to scientific communication and both European and national proposal preparation are also envisaged.
COMPANY/RESEARCH INSTITUTION	Sarmed Legal head office: via Centauro 24, Iglesias, Italy
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	The Hebrew University of Jerusalem, Jerusalem, Israel Contact person Prof. Danny Porath
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 2	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Morphing and deepfake detection of facial images for securing and transmitting identity photo
PRINCIPAL INVESTIGATORS	Prof. Gian Luca Marcialis
DESCRIPTION OF	• Acquisition, through the experience and know-how of the proposing group,

DOCTORAL TRAINING	of computer vision and artificial intelligence tools for the detection of fake morphing and deepfakes. • Period of stay in the company for integration with the client in charge of encrypting and sealing facial data using private keys with issue of the certificate anchored in a public blockchain. • Period of stay abroad for further acquisition of know-how on fake facials and collaboration with internationally recognized research groups. • Study and implementation of methods and models for the detection of morphing and deepfake facial artifacts and for the protection of the image for the preservation of its integrity. • Participation in doctoral schools and relevant international conferences and publication of at least one article in a top-ranking international scientific journal or definition of one or more patents.
COMPANY/RESEARCH INSTITUTION	DEDEM S.p.A. Legal head office: via Cancelliera, 59 - Ariccia (RM) Contact person: Dott. Federico Lama
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	The PhD student will be able to choose one or more of the following available foreign institutions: 1) Prof. Sébastien Marcel – IDIAP Research Institute – Rue Marconi 19, 1920 Martigny, Switzerland 2) Prof. Julian Fierrez – Universidad Autonoma de Madrid, C/ Einstein 13, 28049 Madrid, Spain, VAT number: ESQ2818013A 3) Prof. Christoph Busch - Norwegian University of Science and Technology (NTNU) - Norwegian Biometrics Laboratory (NBL) - Teknologiveien 22 Postbox 191 2802 Gjøvik, Norway//Hochschule Darmstadt Schöfferstr. 10 64295 Darmstadt (Germany) 4) Prof. Nicola Strisciuglio – University of Twente (The Netherlands) 5) Dott. Ajita Rattani – Wichita State University – 246, Jabara Hall – Wichita (USA) 6) Prof. Emanuela Marasco – George Mason University (USA) 7) Prof. Stephanie Schuckers – Clarkson University (USA) 8) Prof. Nick Evans – EURECOM (France) 9) Prof. Jean-Luc Dugelay – EURECOM (France)
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 3	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	IOT and Industry 4.0 technologies for systems analysis and engineering
PRINCIPAL INVESTIGATORS	Prof. Alessandro Fanti
DESCRIPTION OF DOCTORAL TRAINING	Interdisciplinary training offered by universities and corporate Knowledge. Specific research activity on the topic of the research project
COMPANY/RESEARCH INSTITUTION	ARGIOLAS FORMAGGI s.r.l.
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	12
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.

NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 4	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Robust Machine Learning for CyberSecurity
PRINCIPAL INVESTIGATORS	Prof. Battista Biggio
DESCRIPTION OF DOCTORAL TRAINING	The PhD candidate is expected to learn the basics about the security of artificial intelligence and machine learning, including the type of attacks that can be staged against these technology and potential mitigations. The PhD candidate is then expected to spend 6 months within Pluribus One, a cybersecurity company, and 6 months abroad at King's College London (KCL) under the co-supervision of Prof. Fabio Pierazzi, who is a leading expert on developing machine learning models for cybersecurity-related tasks. The PhD candidate will also follow PhD courses offered at the University of Cagliari as part of the corresponding PhD programme, as well as courses offered at KCL during their stay abroad.
COMPANY/RESEARCH INSTITUTION	Pluribus One s.r.l. Legal head office: via Bellini 9, Cagliari
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	King's College London Legal head office: Strand, WC2R 2LS, London, UK Contact person: Prof. Fabio Pierazzi
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 5	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Advanced measurement systems for optimizing self-consumption in smart grid and smart building contexts
PRINCIPAL INVESTIGATORS	Prof. Paolo Castello - Prof. Sara Sulis
DESCRIPTION OF DOCTORAL TRAINING	The doctoral plan provides for synergistic training between the company Tecnolav Engineering S.r.l. and the Instrumentation and Measurement Group to train a candidate in accordance with the objectives also set in milestone 2 of the NRRP. The ideal candidate is an electrical engineer who will be trained on the most advanced metering architectures for modern electricity grids and specifically for energy communities and smart buildings. Particular attention will be given to the quality of the acquired data to improve it through appropriate processing techniques. At the company headquarters, the candidate will carry out practical and research activities to learn the basic elements of multidisciplinary engineering projects and identify useful case studies to verify the architectures and methodologies being researched. A period of 6 months will be carried out in an engineering company or a foreign research centre to deepen the training further.
COMPANY/RESEARCH INSTITUTION	Tecnolav Engineering s.r.l. Legal head office: Via Peretti, 11 - 09121 Cagliari Contact person: Ing. Salvatore Franzone
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	12

FOREIGN INSTITUTION	Forschungszentrum Jülich GmbH of Germany Legal head office: Wilhelm-Johnen-Straße, Jülich, Germany
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 6	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Advanced system for cyber threat analysis and detection
PRINCIPAL INVESTIGATORS	Prof. Giorgio Giacinto
DESCRIPTION OF DOCTORAL TRAINING	The Ph.D. student will be exposed to different training opportunities. The student will access all relevant scientific and technical literature on the selected topic. Participation in scientific conferences, seminars, and workshops organized at the University of Cagliari or other universities, research centers, or organizations will be encouraged. The international network of connections and the active collaboration with many institutions will facilitate achieving a broad and deep understanding of the most relevant research issues and current directions. "Training-on-the-job" will be carried out both within the lab at the University of Cagliari and during the period of stay in the company and the period of stay abroad.
COMPANY/RESEARCH INSTITUTION	ABISSI s.r.l. Legal head office: Ex S.S. 131 km 10.500, Sestu
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	8
FOREIGN INSTITUTION	UCL (London, UK) or IMDEA (Spain) or another TBD
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 7	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	In-memory computing architectures
PRINCIPAL INVESTIGATORS	Prof. Massimo Barbaro
DESCRIPTION OF DOCTORAL TRAINING	The training activities, as part of the doctoral course, include an in-depth study of the design and development techniques of highly complex electronic systems. In particular, in-depth study on the design of microelectronic circuits and new technologies for the production of miniaturized devices. Also, in-depth study of CAD/EDA software for design of analog and digital circuits. In addition to the technological training, training activities relating to scientific communication and both European and national proposal preparation are also envisaged.
COMPANY/RESEARCH INSTITUTION	Insyde Legal head office: via Opera Pia 11, Genova
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	ETHZ Zurich Contact person: prof. Michele Magno
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6

SCHOLARSHIP 8	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Empowering personal recognition based on fingerprint and iris by presentation attack detection algorithms
PRINCIPAL INVESTIGATORS	Prof. Gian Luca Marcialis
DESCRIPTION OF DOCTORAL TRAINING	• Acquisition, through the experience and know-how of the proposing group, of computer vision and artificial intelligence tools for the detection of fake fingerprints and irises. • Period of stay in the company for testing the systems using remote sensors created by the company itself. • Period of stay abroad for further acquisition of know-how on counterfeits and collaboration with internationally recognized research groups. • Study and implementation of methods and models for the detection of fake fingerprints and irises. • Participation in doctoral schools and relevant international conferences and publication of at least one article in a top-ranking international scientific journal or definition of one or more patents.
COMPANY/RESEARCH INSTITUTION	BIOMEYE s.r.l. Legal head office: via Pasubio 5, Dalmine (BG)
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	12
FOREIGN INSTITUTION	The PhD student will be able to choose one or more of the following available foreign institutions: 1) Prof. Josef Bigun, Halmstad University (Sweden), josef.bigun@hh.se 2) Prof. Christoph Busch - Norwegian University of Science and Technology (NTNU) - Norwegian Biometrics Laboratory (NBL) - Teknologiveien 22 Postbox 191 2802 Gjøvik, Norway//Hochschule Darmstadt Schöfferstr. 10 64295 Darmstadt (Germany) 3) Prof. Julian Fierrez – Universidad Autonoma de Madrid (Spain) 4) Prof. Stephanie Schuckers, Clarkson University (USA), sschucke@clarkson.edu 5) Prof. Nicola Strisciuglio – University of Twente (The Netherlands) 6) Dott. Ajita Rattani – Wichita State University – 246, Jabara Hall – Wichita (USA) 7) Prof. Emanuela Marasco – George Mason University (USA) 8) Prof. Nick Evans – EURECOM (France) 9) Prof. Jean-Luc Dugelay – EURECOM (France)
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 9	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Iris recognition at-a-distance
PRINCIPAL INVESTIGATORS	Prof. Gian Luca Marcialis
DESCRIPTION OF DOCTORAL TRAINING	• Acquisition, through the experience and know-how of the proposing group, of computer vision and artificial intelligence tools for personal recognition. • Period of stay in the company for testing the systems using remote sensors created by the company itself. • Period of stay abroad for further acquisition of know-how on counterfeits and collaboration with internationally recognized research groups. • Study and implementation of methods and models for iris recognition. • Participation in doctoral schools and relevant international conferences and

	publication of at least one article in a top-ranking international scientific journal or definition of one or more patents.
COMPANY/RESEARCH INSTITUTION	BIOMEYE s.r.l. Legal head office: via Pasubio 5, Dalmine (BG)
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	12
FOREIGN INSTITUTION	1) Prof. Josef Bigun, Halmstad University (Sweden), josef.bigun@hh.se 2) Prof. Christoph Busch - Norwegian University of Science and Technology (NTNU) - Norwegian Biometrics Laboratory (NBL) - Teknologiveien 22 Postbox 191 2802 Gjøvik, Norway//Hochschule Darmstadt Schöfferstr. 10 64295 Darmstadt (Germany) 3) Prof. Stephanie Schuckers, Clarkson University (USA), sschucke@clarkson.edu 4) Prof. Nicola Strisciuglio – University of Twente (The Netherlands) 5) Dott. Ajita Rattani – Wichita State University – 246, Jabara Hall – Wichita (USA) 6) Prof. Emanuela Marasco – George Mason University (USA) 7) Prof. Nick Evans – EURECOM (France) 8) Prof. Jean-Luc Dugelay – EURECOM (France) 9) Prof. Julian Fierrez – Universidad Autonoma de Madrid (Spain)
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 10	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Engineering, monitoring and control of complex food systems through the use of Artificial Intelligence algorithms
PRINCIPAL INVESTIGATORS	Prof. Alessandro Fanti
DESCRIPTION OF DOCTORAL TRAINING	Interdisciplinary training offered by universities and corporate Knowledge - Specific research activity on the topic of the research project.
COMPANY/RESEARCH INSTITUTION	STUDIOA AUTOMAZIONE s.r.l.
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	12
FOREIGN INSTITUTION	The foreign institution where the activity will be carried out and the relative contact person will be defined after the conclusion of the selection procedure.
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 11	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Development of high-density cortical probes for recording/stimulation and with wireless connectivity
PRINCIPAL INVESTIGATORS	Prof. Massimo Barbaro

DESCRIPTION OF DOCTORAL TRAINING	The training activities, as part of the doctoral course, include an in-depth study of the design and development techniques of highly complex electronic systems. In particular, in-depth study on the design of microelectronic circuits and new technologies for the production of miniaturized devices. Also, in-depth study of CAD/EDA software for design of analog and digital circuits. In addition to the technological training, training activities relating to scientific communication and both European and national proposal preparation are also envisaged.
COMPANY/RESEARCH INSTITUTION	Corticale Legal head office: via Pietro Chiesa 9, Genova
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	Plexon Inc., Dallas, USA Contact person: Harvey Wiggins
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 12	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Secure and Explainable Machine Learning
PRINCIPAL INVESTIGATORS	Prof. Battista Biggio
DESCRIPTION OF DOCTORAL TRAINING	The PhD candidate is expected to learn the basics about adversarial robustness of artificial intelligence and machine learning, explainability, and generative models. The PhD candidate is then expected to spend 6 months within Robust Intelligence, a company specialized on AI Security, and 6 months abroad at TU Berlin under the co supervision of Prof. Konrad Rieck, who is a leading expert on developing machine learning models for cybersecurity-related tasks. The PhD candidate will also follow PhD courses offered at the University of Cagliari as part of the corresponding PhD programme, as well as courses offered at TU Berlin during their stay abroad.
COMPANY/RESEARCH INSTITUTION	Robust Intelligence, Inc. Legal head office: 555 19th Street, 94107 San Francisco (California, USA)
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	TU Berlin Legal head office: Strasse des 17, Juni 135, 10623 Berlino, Germany Contact person: Prof. Konrad Rieck
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6
SCHOLARSHIP 13	
TYPOLOGY	Innovative doctorates responding to the innovation needs of companies and promoting the recruitment of researchers by companies (M4C2 - Inv. 3.3)
RESEARCH PROJECT	Advanced techniques for continuous identification and authentication in computer systems
PRINCIPAL INVESTIGATORS	Prof. Giorgio Giacinto
DESCRIPTION OF DOCTORAL TRAINING	The Ph.D. student will be exposed to different training opportunities. The student will access all relevant scientific and technical literature on the selected topic. Participation in scientific conferences, seminars, and workshops organized at the University of Cagliari or other universities, research centers, or organizations will be encouraged. The international

	network of connections and the active collaboration with many institutions will facilitate achieving a broad and deep understanding of the most relevant research issues and current directions. "Training-on-the-job" will be carried out both within the lab at the University of Cagliari and during the period of stay in the company and the period of stay abroad.
COMPANY/RESEARCH INSTITUTION	Oplon Networks S.r.l Legal head office: via Carlo Rezzonico 37, Padova
NO. OF MONTHS TO BE SPENT IN THE COMPANY/RESEARCH INSTITUTION	6
FOREIGN INSTITUTION	SBA Research Legal head office: Floragasse 7, 5th Floor, Vienna, Austria Contact person: Prof. Edgar Weippl
NO. OF MONTHS TO BE SPENT IN THE FOREIGN INSTITUTION	6