UNIVERSITY OF PALERMO

The University of Palermo (UNIPA) was officially founded in 1806, although its earliest roots date back to 1498 when medicine and law were taught there. A little later in history, from the second half of the 16th century from their seat at the Collegio Massimo al Cassero, the Jesuit Fathers granted degrees in Theology and Philosophy - subjects in which they had been masters for over 200 years.

In 1767 they were expelled from the kingdom by King Ferdinand I, until 37 years later when they returned to take their seat - which in the meantime had been turned into the Regia Accademia.

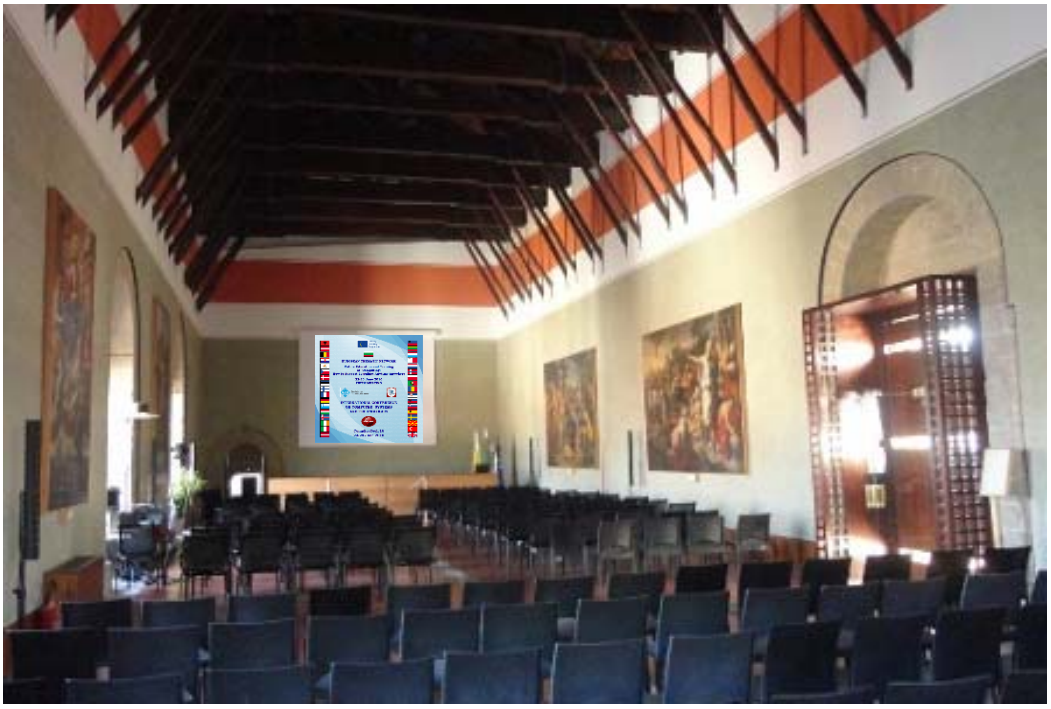
At this time the same King Ferdinand decided to grant a worthy seat to the Accademia, moving its location to the Convent of the Teatini Fathers next to the Church of St. Giuseppe.

After the unification of Italy in 1860 the University of Palermo was modernised under the impetus of the chemist Stanislao Cannizzaro and the minister and specialist in Arab studies Michele Amari, more or less assuming its present appearance. Since 1984 the main building of the University, housing the Rector's office, is Palazzo Chiaramonte-Steri, one of the most important historical buildings in Palermo, built in 1307 and formerly the residence of the Chiaramonte. Not far from Palazzo Steri, on land formerly belonging to the Chiaramonte, the Botanical Gardens of Palermo constitute a further admirable pearl of the University.

Today, the University has grown to be an institution of about 2000 lecturers and 50,000 students in which research in all main fields of study is carried out. In the past few years the university has actively taken part in international cooperation programmes.

https://www.google.com/maps/d/viewer?mid=zss4xtiju5UQ.kAERfVInt8_A

MEETING
Wednesday, 22 June 2016
Sala delle Capriate
Main Building of UNIPA
Palazzo Chiaramonte-Steri, Piazza Marina, 61



MEETING
Thursday, 23 June 2016
Department of Mathematics and Computer Science (DMI)
Aula 4
Via Archifari, 34

CONFERENCE
Thursday, 23 June 2016
Aula Lanza at Botanic Garden
Herbarium Mediterraneum Panormitanum
Via Lincon, 2

CONFERENCE
Friday, 24 June 2016
Department of Mathematics and Computer Science (DMI)
Aula 4, 5, 7
Via Archirafi, 34

♦ CONFERENCE OBJECTIVE

The ***CompSysTech'16*** International Conference is organized by **THE ASSOCIATION FOR COMPUTING MACHINERY (N.Y., USA)** and by **THE BULGARIAN ACADEMIC SOCIETY OF COMPUTER SYSTEMS AND INFORMATION TECHNOLOGIES** and its OBJECTIVE is to intensify the information exchange of results in theoretical research and practical developments in this field.

CompSysTech'16 is organized under the patronage of:

- **EUROPEAN COMMISSION - Education, Audiovisual and Culture Executive Agency**
- **John Atanasoff Union of Automation and Informatics**
- **Bulgarian Academy of Sciences;**
- **Bulgarian Chapter of IEEE Computer Society;**
- **Bulgarian Chapter of IEEE Communications Society.**

♦ INTERNATIONAL PROGRAMME COMMITTEE

- **Honorary Co-Chairs:**

Kiril Boyanov (Member of BAS, DSc., Bulgaria)
Vassil Sgurev (Member of BAS, DSc., Bulgaria)

- **Chair:**

Boris Rachev (QUERBIE Inc. MA USA)
Domenico Tegolo (UNIPA, Italy)

- **Scientific Secretary:**

Dimo Dimov (BAS, Bulgaria)

- **Secretery:**

Yordan Kalmukov (University of Ruse, Bulgaria)

- **Members:**

Alexander Sudnitson (Estonia)
Amar Ramdane-Cherif (France)
András Benczúr (Hungary)
Antanas Zilinskas (Lithuania)
Antonio Mendes (Portugal)
Avram Eskenazi (Bulgaria)
Bojan Cestnik (Slovenia)
Boris Novikov (Russia)
Candelaria Hernández Goya (Spain)
Constantinos Pattichi (Cyprus)
Dana Petcu (Romania)
Daniela Chuda (Slovakia)
Diana Kalibatiene (Lithuania)
Dimitris Karagiannis (Austria)
Douglas Harms (United States)
Erika Nazaruka (Latvia)
Eugenijus Macikenas (Lithuania)
Evtim Peytchev (United Kingdom)
Francisca Losavio (Venezuela)
George Totkov (Bulgaria)
Georgi Gluhchev (Bulgaria)
Georgi Todorov (Bulgaria)
Kostadin Kratchanov (Turkey)
Krassen Stefanov (Bulgaria)
Lacezar Licev (Czech Republic)
Ladislav Hudec (Slovakia)
Leon Rothkrantz (Netherlands)
Leoneed Kirilov (Bulgaria)
Lyudmil Dakovski (Bulgaria)
Marco Porta (Italy)
Margarita Todorova (Bulgaria)
Maria Jose Marcelino (Portugal)
Marite Kirikova (Latvia)
Markus Helfert (Ireland)
Martin Llamas-Nistal (Spain)
Michael Vassilakopoulos (Greece)
Michal Krátký (Czech Republic)
Mirjana Ivanovic (Serbia)
Neli Maneva (Bulgaria)
Nikolay Mehandjiev (United Kingdom)
Novruz Allahverdi (Turkey)
Olegas Vasilecas (Lithuania)
Pavol Navrat (Slovakia)
Peter Stanchev (United States)

Grisha Spasov (Bulgaria)
Gundars Alksnis (Latvia)
Hannu Jaakkola (Finland)
Heinz-Dietrich Wuttke (Germany)
Hilda Tellioglu (Austria)
Howard Duncan (Ireland)
Iliya Georgiev (United States)
Ivan Jelinek (Czech Republic)
Janis Grundspenkis (Latvia)
Janusz Jabłonowski (Poland)
Jaroslav Pokorny (Czech Republic)
Jiri Srba (Denmark)
Jukka Teuhola (Finland)
Juliana Peneva (Bulgaria)
Karl Jones (United Kingdom)
Pino Caballero-Gil (Spain)
Radi Romansky (Bulgaria)
Rebecca Bartlett (United Kingdom)
Ricardo Colomo-Palacios (Norway)
Roumen Nikolov (Bulgaria)
Sebastiano Battiato (Italy)
Stavros Nikolopoulos (Greece)
Steve Beaty (United States)
Stoicho Stoichev (Bulgaria)
Tadeusz Morzy (Poland)
Timos Sellis (Australia)
Tzvetomir Vassilev (Bulgaria)
Ville Leppänen (Finland)
Vladimir Lazarov (Bulgaria)
Yannis Manolopoulos (Greece)

♦ ORGANIZING COMMITTEE

- **Co-Chairs:**

Angel Smrikarov (Bulgaria)
Biagio Lenzitti (Italy)

- **Secretary:**

Eugenia Dimitrova (Bulgaria)
Cesare Valenti (Italy)

- **Members:**

Stoyanka Smrikarova (Bulgaria)
Tzvetozar Georgiev (Bulgaria)
Yordan Kalmukov (Bulgaria)
Fabio Bellavia (Italy)
Giosuè Lo Bosco (Italy)
Marco Alfano (Italy)
Giuseppa Sciortino (Italy)
Guido Averna (Italy)

♦ TOPICS

1. **Computer Systems (Hardware).**
2. **Computer Systems (Software).**
3. **Application Aspects of Computer Systems and Technologies.**
4. **Educational Aspects of Computer Systems and Technologies**

CompSysTech'16 **Co-Event –**
Workshop „Advances in high performance services for digital, multilingual education (AHPISDME)“

REGISTRATION
for the CONFERENCE

Wednesday, 22 June 2016, 9:00
in front of Sala delle Capriate

Thursday, 23 June 2016, 9:00, 14:30
DMI, Aula 3

Friday, 24 June 2016, 9:00
DMI, Aula 3

Thursday, 23 June 2016, 15:00
Aula Lanza

OPENING

WELCOME

Chair: **Domenico Tegolo**

MUSICAL GREETING

PLENARY SESSION

Chair: **Domenico Tegolo**

PAOLO ATZENI
Head of Department of Engineering, Informatics and Automation, University Roma Tre, Italy
http://www.dia.uniroma3.it/~atzeni/

Data Modelling in the NoSQL World

SEBASTIANO BATTIATO
Department of Mathematics and Computer Science, University of Catania, Italy
http://www.dmi.unict.it/~battiato

Multimedia Forensics: discovering the history of multimedia contents. Recent trends and perspectives

DIMITAR JETCHEV
Section des Mathematiques SMA, Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland
https://people.epfl.ch/dimitar.jetchev/bio?lang=en&cvlang=en

Secure operations on encrypted data for the cloud

DISCUSSIONS

17:00 – 18:00
in front of Aula Lanza
REGISTRATION

PROGRAMME SUMMARY

	Aula 4	Aula 5	Aula 7
9:00 – 11:00	**Session A1** **Software Engineering (1)** Number of papers: 6	**Session B1** **Image Processing & Computer Vision** Number of papers: 6	**Session C1** **Workshop AHPISDME (1)** Number of papers: 6
11:00 – 11:30	**COFFEE BREAK** 		
11:30 – 13:30	**Session A2** **Software Engineering (2)** Number of papers: 3 **Software Security & Computer Networks** Number of papers: 4	**Session B2** **AI in Medicine and Healthcare** Number of papers: 6	**Session C2** **Workshop AHPISDME (2)** Number of papers: 7
13:30 – 14:30	**LUNCH** 		
14:30 – 16:30	**Session A3** **Cloud Computing & Distributed Systems** Number of papers: 5 **Hardware** Number of papers: 1	**Session B3** **AI in Localization** Number of papers: 4 **Biometrics** Number of papers: 3	**Session D** **Information Retrieval & Language Processing** Number of papers: 4
16:30 – 17:00	**THE BEST PAPERS AWARDS** **Aula 7**		

All halls are on the Department of Mathematics and Computer Science

Session A1

Chair: **Constantinos S. Pattichis**
Co-Chair: **Radi Romansky**
Scientific Secretary: **Diana Kalibatiene**

Friday, 24th June 2016
09:00 – 11:00
Aula 4

SOFTWARE ENGINEERING (1)

1. **Resource Modelling for the Rule- and Context-Based Dynamic Business Process Simulation**
   Diana Kalibatiene, Olegas Vasilecas, Vjaceslavs Bobrovs
2. **An approach for allocation of shared resources in the rule-based business process simulation**
   Toma Rusinaite, Olegas Vasilecas, Titas Savickas, Tadas Vysockis, Kesturis Normantas.
3. **Games as Software – Similarities and Differences between the Implementation Projects**
   Jussi Kasurinen
4. **An Evaluation Framework for Cross-Platform Mobile App Development Tools: A case analysis of Adobe PhoneGap framework**
   Ville Ahti, Sami Hyrynsalmi, Olli Nevalainen
5. **Compiler assisted dynamic allocation of finite hardware acceleration resources for parallel tasks**
   Jari-Matti Mäkelä, Martti Forsell, Ville Leppänen
6. **A Framework for Opening Data and Creating Advanced Services in the Health and Social Fields**
   Marco Alfano, Biagio Lenzitti, Giosuè Lo Bosco, Davide Taibi

DISCUSSIONS

11:00 – 11:30
Coffee Break - Foyer

Session A2

Chair: **Alfred Iwainsky**
Co-Chair: **Stefanie Östlund**
Scientific Secretary: **Princy Johnson**

Friday, 24th June 2016
11:30 – 13:30
Aula 4

SOFTWARE ENGINEERING (2)

1. **A Multimodal Fruition Model for Graphical Contents in Ancient Books**
   Vito Gentile, Salvatore Sorce, Giuseppe Russo, Dario Pirrone, Antonio Gentile
2. **Development of a Tool for the Graphical Modelling of 3D CAD Models using a Rapid Prototyping Framework**
   Vishnu Prashanth Murugan, Robert Scheffler, Gregor Wrobel, Dr. Matthias Pleßow
3. **Diversity in Smartphone Usage**
   Amhmed A. Bhih, Princy Johnson, Martin Randles

SOFTWARE SECURITY AND COMPUTER NETWORKS

1. **Advances In Distributed Security For Mobile Ad Hoc Networks**
   Jozef Filipek, Ladislav Hudec
2. **A Model for Establishing Response-time Bounds to Prevent Malware Pandemics in Mobile Devices**
   Stavros D. Nikolopoulos, Iosif Polenakis
3. **On the Design of a Simple Network Resolver for DNS Mining**
   Jukka Ruohonen, Ville Leppänen
4. **A Survey on Aims and Environments of Diversification and Obfuscation in Software Security**
   Shohreh Hosseinzadeh, Sampsa Rauti, Samuel Laurén, Jari-Matti Mäkelä, Johannes Holvitie, Sami Hyrynsalmi, Ville Leppänen

DISCUSSIONS

13:30 – 14:30
Lunch

Session A3

Chair: **Ali Gungor**
Co-Chair: **Georgi Georgiev**
Scientific Secretary: **Alessandra De Paola**

Friday, 24th June 2016
14:30 – 16:30
Aula 4

CLOUD COMPUTING AND DISTRIBUTED SYSTEMS

1. **A Framework for Parallel Assessment of Reputation Management Systems**
   Vincenzo Agate, Alessandra De Paola, Salvatore Gaglio, Giuseppe Lo Re, Marco Morana
2. **Issues on Developing a Location Aware Game for Mobile Browsers**
   Sinan Kaplan, Jouni Ikonen, Antti Knutas
3. **SESAMO: An Integrated Framework for Gathering, Managing and Sharing Environmental Data**
   Vincenzo Agate, Calogero Crapanzano, Alessandra De Paola, Salvatore Gaglio, Goffredo La Loggia
4. **Home Energy Monitoring System based on Open Source Software and Hardware**
   Evtim Peytchev, Mihail Lyaskov, Kostadin Popovski, Grisha Spasov
5. **Cloud–Based System for Real Time Medication Monitoring**
   Vencislav Venkov, Rosen Ivanov

HARDWARE

1. **Handshake Controller for 3-alternative Conditional Transition**
   Dimitar Tyanev, Yulka Petkova

DISCUSSIONS

Session B1

Chair: **Virginio Cantoni**
Co-Chair: **Tsvetozar Georgiev**
Scientific Secretary: **Yulian Pastarmov**

Friday, 24th June 2016
09:00 – 11:00
Aula 5

IMAGE PROCESSING AND COMPUTER VISION

1. **System for Automatic Camera Calibration Robust Against Blur and Lighting Conditions Changes**
   Yulian Pastarmov
2. **An innovative 3D color barcode - Intuitive and realistic visualization of digital data**
   Mario Koddenbrock, Daniel Herfert, Frank Püschel, Cornelia Rataj, Matthias Melitzki
3. **A multiscale approach to automatic and unsupervised retinal vessel segmentation using Self-Organizing Maps.**
   Carmen Alina Lupascu, Domenico Tegolo
4. **A Multi-spectral Stereo Method to Retrieve Cloud top Height applied to Geostationary Satellite images**
   Anna Anzalone, Francesco Isgrò
5. **The Exact (Rho,Theta)-Hough Transform -- Definition and Performance**
   Dimo Dimov, Aleksandar Dimov
6. **An Enhanced Method for Automatic Detection and Segmentation of Carotid Artery in Ultrasound Images**
   Lacezar Licev, Karolina Feberova, Jan Tomecek, Jakub Hendrych

DISCUSSIONS

11:00 – 11:30
Coffee Break - Foyer

Session B2

Chair: **Tanja Urbančič**
Co-Chair: **Janusz Jabłonowski**
Scientific Secretary: **Boyan Yankov**

Friday, 24th June 2016
11:30 – 13:30
Aula 5

AI IN MEDICINE AND HEALTHCARE

1. **Automatic detection system of micro sleeps of car drivers based on EEG analysis**
   Leon Rothkrantz
2. **Classification Experiments of DNA Sequences by Using a Deep Neural Network and Chaos Game Representation**
   Riccardo Rizzo, Antonino Fiannaca, Massimo La Rosa, Alfonso Urso
3. **An Expert System for Healthful and Dietary Nutrition**
   Ivo Marinchev, Gennady Agre
4. **Software Application for Smile Design Automation Using the Visagism Theory**
   Boyan Yankov, Georgi Iliev, Dimitar Filchev, Galip Gurel, Braulio Paolucci, Adriano Shayder, Iva Misheva
5. **Serious Gaming: Autonomy and Better Health for the Elderly**
   Manolo Dulva Hina, Amar Ramdane-Cherif, Sébastien Dourlens
6. **EXPO: A Modern NoSQL-based ebXML Registry for Health Information Systems**
   Antonio Messina, Pietro Storniolo, Alfonso Urso

DISCUSSIONS

13:30 – 14:30
Lunch

Session B3

Chair: **Dimo Dimov**
Co-Chair: **Karl Jones**
Scientific Secretary: **Peter Filípek**

Friday, 24th June 2016
14:30 – 16:30
Aula 5

AI IN LOCALIZATION

1. **Optimizing Artifical Neural Network for Beacon Based Indoor Localization**
   Filip Mazan, Alena Kovárová
2. **Indoor Localization Based on Beacons and Calculated by Particle Filter**
   Peter Filípek, Alena Kovárová
3. **Beacon Based Localization Refined by Outputs from Mobile Sensors**
   Matej Liskovec, Alena Kovárová
4. **An approach for microscopic path finding and obstacle avoidance for blind and visually impaired people**
   Rosen Ivanov

BIOMETRICS

1. **Toward Posture Recognition with Touch Screen Biometrics**
   Daniela Chudá, Kamil Burda
2. **Fine-tuning Web Traffic Statistics by Deduplication and Splitting of Visitors Records Using Mouse Biometrics**
   Peter Kratky, Daniela Chuda
3. **Eye Tracking for Cultural Heritage: a Gaze-controlled System for Handless Interaction with Artworks**
   Virginio Cantoni, Marco Porta, Lorenzo Merlano, Nahumi Nugrahaningsih

DISCUSSIONS

Session C1

Chair: **Margarita Todorova**
Co-Chair: **Antonio Maratea**
Scientific Secretary: **Sintija Petrovica**

Friday, 24th June 2016
09:00 – 11:00
Aula 7

WORKSHOP
"Advances in high performance services for digital, multilingual education"
(AHPISDME 1)

1. **On the Use of Social Media In Distance Learning**
   Leon Rothkrantz
2. **Commercial Off-the-Shelf Games as Learning Media**
   Veljko Aleksić, Mirjana Ivanović, Zoran Budimac, Elvira Popescu
3. **Towards a Constructionist Serious Game Engine**
   Adilson Vahldick, António José Mendes, Maria José Marcelino
4. **e-assessment – students' point of view**
   Ásrún Matthíasdóttir, Hallgrímur Arnalds
5. **CodeInsights - Monitoring programming students' progress**
   Nuno Gil Fonseca, Luís Macedo, António José Mendes
6. **Integrated education in e-learning design and development through synchronised assignments and assessments of courses**
   Pencho Mihnev, Krassen Stefanov, Eliza Stefanova

DISCUSSIONS

11:00 – 11:30
Coffee Break - Foyer

Session C2

Chair: **Hilda Telliolgu**
Co-Chair: **Rositsa Doneva**
Scientific Secretary: **Laurentiu Deaconu**

Friday, 24th June 2016
11:30 – 13:30
Aula 7

WORKSHOP
"Advances in high performance services for digital, multilingual education"
(AHPISDME 2)

1. **Increasing students' academic results in e-course using educational recommendation strategy**
   Martina Holenko Dlab, Natasa Hoic-Bozic
2. **New Trends in Information Technologies and Their Integration in University Curricula: a Brief Study in the Context of the FETCH European Thematic Network**
   Marco Porta, Betim Çiço, Peter Kaczmarski, Neki Frasheri, Virginio Cantoni, Fernand Vandamme
3. **Promoting Inclusive Informatics Education Through Bebras Challenge to All K-12 Students**
   Valentina Dagienė, Gabrielė Stupurienė, Lina Vinikienė
4. **Modula-2 versus Java as the first programming language: Evaluation of students' performance**
   Miloš Savić, Mirjana Ivanović, Miloš Radovanović, Zoran Budimac
5. **The Flipped Classroom Method: Lessons Learned from Flipping Two Programming Courses**
   Antti Knutas, Antti Herala, Erno Vanhala, Jouni Ikonen
6. **3D Learning Tool for Measuring of Constructive and Geometrical Parameters of Turning Tools**
   Galina Ivanova, Aleksandar Ivanov, Vasil Kozov
7. **Personalized Educational Paths through Self-Modifying Learning Objects**
   Georgi Pashev, Georgi Totkov, Hristina Kostadinova, Hristo Indzhov

DISCUSSIONS

13:30 – 14:30
Lunch

Session D

Chair: **Suzana Loshkovska**
Co-Chair: **Kemal Tutuncu**
Scientific Secretary: **Diana Grigorova**

Friday, 24th June 2016
14:30 – 16:30
Aula 7

INFORMATION PRETRIEVAL & LANGUAGE PROCESSING

1. **Cloud-based Patent and Paper Analysis Tool for Comparative Analysis of Research**
   Samira Ranaei, Antti Knutas, Juho Salminen, Arash Hajikhani
2. **Knowledgebase Harvesting for User-Adaptive Systems Through Focused Crawling and Semantic Web**
   Bujar Raufi, Florije Ismaili, Jaumin Ajdari, Xhemal
3. **Hybrid approach to zero pronoun resolution in Bulgarian**
   Diana Grigorova
4. **GI-learning: an optimized framework for grammatical inference**
   Pietro Cottone, Marco Ortolani, Gabriele Pergola

DISCUSSIONS

Friday, 24 June 2016, 16:30, DMI, Aula 7

**The CHAIRS
of the PROGRAMME COMMITTEE
and
the ORGANIZING COMMITTEE
will bestow
a CRYSTAL PRIZE
to the authors of the best papers.**

**The paper of a young researcher will be awarded
with the Prof. Vito Di Gesù AWARD**

Friday, 24 June 2016, 17:15, DMI, Aula 7

**Meeting
of the PROGRAMME COMMITTEE and ORGANIZING COMMITTEE
and the chairs of each sections
of the *CompSysTech'16***

Photos from
UNIVERSITY OF PALERMO

Wednesday, 22 June 2016, 20:00

MEETING SOCIAL DINNER
KURSAAL KALHESA
Foro Umberto I, 21/A
http://www.kursaalkalhesa.com

Thursday, 23 June 2016, 20:00

CompSysTech'16 SOCIAL DINNER
GRAND HOTEL PIAZZA BORSA
Via dei Cartari, 18
http://www.piazzaborsa.it/index.php/en

Photos from PALERMO

R E M A R K S