

CURRICULUM VITAE

MICHELE BERLINGERIO

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1 General Information

Gender: Male

Date of birth: October 10th, 1980

City of birth: Bari, Italy

Home address (please use this for official communication): viale degli Ulivi - Parchitello, n. 3,
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2 Qualifications

- Ph.D. in Computer Science and Engineering (with additional title of “Doctor Europaeus”)
Date: 16/12/2009.
Given by: IMT Advanced Studies, Lucca, Italy
Final Grade: Excellent.
Advisors: Fosca Giannotti, (ISTI-CNR, Pisa), Francesco Bonchi (Yahoo! Research, Barcelona) (see [26]).
Internal PhD commission: Fosca Giannotti, Francesco Bonchi, Paolo Ciancarini (University of Bologna), Roberto Grossi (University of Pisa)
International reviewers: Aristides Gionis (Yahoo! Research Barcelona), Christophe Rigotti (INSA Lyon), Dimitrios Gunopuls (University of Athens).
- M.Sc. in Computer Science
Date: 9/12/2005.
Given by: University of Pisa
Final Grade: 110/110.
Advisors: Fosca Giannotti (ISTI-CNR, Pisa), Francesco Bonchi (ISTI-CNR, Pisa), Michele Curcio (Azienda Ospedaliera-Universitaria Pisana) (see [27])

3 Covered Positions

- **Current:** (July-August 2011): Visiting Post-Doc at Rutgers University, New Brunswick, New Jersey. Supervisor: Tina Eliassi-Rad.

- **Current:** (January 1st, 2011 - now): Research Grant from KDDLab, ISTI-CNR on the study and realization of new methods for the analysis of complex networks based on graph mining and data mining techniques. Supervisor: Fosca Giannotti.
- (October 1st, 2009 - December 31st, 2010): Research Grant from KDDLab, ISTI-CNR on the study and realization of new methods for the analysis of complex networks based on graph mining and data mining techniques. Supervisor: Fosca Giannotti.
- (May 1st - September 30rd 2009): Research Grant from KDDLab, ISTI-CNR on the study and prototyping of a system for the analysis of behavior of customers of a large retail distribution chain, with particular emphasis on graph mining techniques. Supervisor: Fosca Giannotti.
- (September 1st - September 22nd 2009): Short term research period, funded by the CNR Short Term Mobility program, at the University of British Columbia, Vancouver, visiting prof. Laks Lakshmanan.
- (May 11th, 2008 - February 13th, 2009): Internship at Yahoo! Research, Barcelona
- (March 1st - December 31st 2008): Research Associate at KddLab - ISTI CNR, Pisa. Projects in which I was involved in this period: “La Miniera della Salute” and “Tocai.it”
- (February 15th - April 30rd 2008): Collaboration Contract from University of Pisa - Department of Computer Science, inside the project “La Miniera della Salute”, subject: construction of a Data Warehouse and analysis with Data Mining techniques
- (February 13th - November 10th, 2007): Collaboration Contract from University of Pisa - Department of Computer Science, inside the project “La Miniera della Salute”, subject: Knowledge Discovery analysis on medical and clinical data
- (June 1st - December 31st 2006): Collaboration Contract from University of Pisa - Department of Computer Science, inside the project “La Miniera della Salute”

4 Studies

- February 2006 - December 2009: PhD in Computer Science and Engineering, IMT Advanced Studies, Lucca, Italy
- May 2008 - February 2009: internship at Yahoo! Research Barcelona
- May 2007: student at SADA Summer School on Algorithmic Data Analysis in Helsinki, Finland
- September 2006: student at KdUbiq Summer School on Ubiquitous Computing in Dortmund, Germany

- June 2006: student at Lipari Summer School on Bioinformatics “Proteomes and Proteins” in Lipari, Italy
- September 1998 - December 2005: M.Sc. (Laurea) in Computer Science at University of Pisa
- August 2002 - December 2002: Erasmus Student at Uppsala University, Sweden

5 Research Statement

My research activity has started during my Master thesis, when I was involved in a collaboration between the KDDLab of the ISTI-CNR in Pisa with the Azienda Ospedaliero-Universitaria Pisana inside the project “La Miniera della Salute” (the Health Mine). My studies have been focused on developing new Data Mining techniques for the analysis of genetic variables involved in diseases leading the patients to the solid organ transplantation. Frequent Pattern Mining techniques have been applied to genetic and clinical data for the discovery of relationships between the variables and the different kind of diseases. Subsequently, Temporally Annotated Sequence Mining techniques have been applied for assessing the effectiveness of the applied post-transplantation therapy. The research activity in this field has lead to several publications (see [1, 12, 14, 13, 27]).

At the beginning of my Phd studies, I started working on Graph Mining and related topics. In this area, my contribution started with the realization of a constraint-based pre-processing technique for graph data. Then, during my internship at Yahoo! Research in Barcelona, I started working on possible applications of Graph Mining, with special focus in Social Network Analysis. To this aim, I have contributed in the realization of a graph miner aimed at extracting frequent graph evolution rules. This research activity has lead to two publications, and a patent (see below), (see [19, 9, 10, 17]).

In the meanwhile, I was also involved in the “Tocai.it” project, in the context of Workflow Mining. I contributed to the realization of a methodology of analysis for process logs, which has lead to two publications so far (see [18, 11]).

Recently, my research activity has been focusing on complex networks such as multidimensional networks (networks in which two entities might be connected by more than one link). This activity is leading towards the creation of new measures and analysis techniques, together with new Data Mining algorithms, for the discovery of knowledge from multidimensional networks. In this area, I explored so far problems ranging from the local analysis of nodes and edges in the multidimensional setting (such as, for example the analysis of multidimensional hubs), to the problems of link prediction in multidimensional networks, multidimensional community discovery, and so on.

This research line finds applications in many contexts: from Social Network Analysis, to Computer Networks, from Biological Networks to the structure of Internet or the Web, from technological networks, to transportation networks. For example, the problem of deciding how to go from New York to Jersey City might be modeled as a multidimensional shortest path

problem with cost modifiers, where traversing different dimensions adds overhead to the path cost.

This activity has already lead to several publications and is still in progress (see [7, 16, 8, 2, 3, 5, 6, 15]).

In the last year, I also started a research line on patterns of human behaviors in network and mobility data. I'm investigating problems such as "How does mobility affect social connections and vice-versa?", "Can we detect community of people based on information on their social connections and mobility behaviors?", "Can we improve urban transportation by building intelligent transportation systems on the basis of patterns of human mobility and social interactions?". This activity is leads so far to a few publications (still under review), and to the organization of an international workshop (NEMO, <http://kdd.isti.cnr.it/nemo>, see below), in conjunction with the ECML-PKDD 2011 conference.

6 Participation to Research Projects

- (2009-present) *MineTheNet*. Internal KDD-Lab project.
Objective: Analysis and Mining complex graph data, with particular focus on Social Networks.
Personal contribution: First, a large number of networks of different nature have been collected and created. Then, a number of new measures of analysis have been defined on multidimensional networks, and tested on real data. Techniques of analysis and Data Mining based on these measures are under development.
- (2009-2010) *FSE - Infrastruttura Tecnologica del Fascicolo Sanitario Elettronico (Technological Infrastructure of the Electronic Health File)*. Project funded by the Italian Ministry of Innovation.
Involved Entities: Italian Ministry of Innovation, and ICT Department of the National Research Council (CNR).
Objective: Developing techniques for the advanced and smart access of the information contained in the electronic health file.
Duration: May 1st, 2009 - May 1st, 2010.
Funding: 200 K euro.
Personal contribution: Application of standard Data Mining techniques to medical data.
- (2009-2010) *Production of a technological innovation aimed at guarantee the social inclusion of blind and deaf-blind people*. Funded by the "Principi Attivi" program of the Regione Puglia. Project ranked first out of 1500.
Involved Entities: Regione Puglia, MiNiBeCa association (Michele Berlingerio - Nicholas Caporusso).
Duration: 12 months, starting March 2009.
Funding: 25 K euro.
Reference: Web site of the project: <http://www.minibeca.org>
Personal contribution: Hardware and software development for the production of a

wearable glove, acting as input-output device via the Malossi alphabet. Currently in progress.

- (2006-2009) *TOCAI.it – Tecnologie Orientate alla Conoscenza per Aggregazioni di Imprese in Internet (Knowledge Oriented Technologies for the Aggregation of Companies in Internet)*. Project of base research of the Italian Ministry of University and Research
Involved Entities: CINI, CM Sistemi SpA, C.N.R., Selex Sistemi Integrati srl, Think 3 inc.
Duration: 36 months from 23.12.2005.
Total funding for CNR: 625 K euro (ISTI-CNR: 75 K euro)
Ref.: Web site of the project: <http://www.dis.uniroma1.it/tocai>.
Personal contribution: After the acquisition of process log data from Think 3 Inc., a new framework for temporal analysis of process logs based on Temporally Annotated Sequence Mining has been developed. The framework extracts a temporally annotated graph corresponding to the workflow diagram of the frequent usage of a process.
- (2009) *BI-COOP – Business Intelligence and Data Warehouse*, Industrial R&D project.
Involved Entities: KDD Lab, ISTI-CNR, UniCoop Tirreno.
Objective: Design and implementation of advanced CRM techniques based on Data Mining
Duration: 12 months, re-funded up to 36, starting 12.06.2006
Funding: 120 K euro.
Personal contribution: After the data acquisition, several kinds of relationships among the customers have been individuated. The impressive richness of the data has required the development of new measures of analysis on a novel data model, namely the multidimensional networks.
- (2005-2009) *La Miniera della Salute (The Health Mine)*. Project co-funded by Fondazione Cassa di Risparmio of Pisa.
Involved Entities: Fondazione Cassa di Risparmio of Pisa, KDD Lab ISTI-CNR, Azienda Ospedaliero-Universitaria Pisana.
Objective: Data Warehousing and Data Mining techniques on genetic and clinical data for discovering the factors involved in diseases leading to the solid organ transplantation, and assessing the effectiveness of the post-transplantation therapies.
Duration: 36 months.
Funding: 60 K euro.
Personal contribution: After the data acquisition, Data Mining techniques have been applied to medical and genetic data for the discovery of the association between clinical variables and different kinds of diseases leading to the transplantation. Data Mining techniques have also been applied to assess the effectiveness of post-transplantation therapies.

7 Fundings and Awards

- 2009: Short Term Mobility, CNR
- 2006: PhD Scholarship from the Italian Ministry of Education

- 2006: IEEE CIS Travel Grant

8 Eligibilities

- 2009: Resulted eligible for the competition Bando ISTI 07/2009 Art. 23 for a place as “Ricercatore livello III”, as of art.23 of the D.P.R. February 12th 1991 n.171.
- 2008: Resulted eligible for the Fulbright Toscana-BEST program

9 Teaching

- (October 2010 - February 2011): Teaching assistant for the course “Web Mining and Social Network Analysis” of the M.Sc. in Informatica per l’Economia e per l’Azienda, teachers Dino Pedreschi, Fabrizio Silvestri
- (September 2009 - February 2010): Teaching assistant for the course “Web Mining and Social Network Analysis” of the M.Sc. in Informatica per l’Economia e per l’Azienda, teacher Fabrizio Silvestri
- (March-April 2008): Teaching Mathematics (12 hours) at the “Liceo Scientifico Vallisneri” high school, Lucca
- (23 January 2008): Teaching Computer Science (5 hours) for a private school, Livorno

10 Activity as Advisor

- 2010: Co-Advisor of the M.Sc. thesis of the Laurea Specialistica in Informatica - University of Pisa, titled “Multidimensional Link Prediction”. Candidate: Giulio Rossetti. Advisors: Fosca Giannotti Kdd-Lab ISTI-CNR Pisa, Michele Berlingerio Kdd-Lab ISTI-CNR Pisa. Date of graduation: 11/03/2011. Final score 105/110 (thesis score 10/11).
- 2010: Co-Advisor of the M.Sc. thesis of the Laurea Specialistica in Informatica per l’economia e per l’azienda (Business Informatics)- University of Pisa, titled “Tecniche di Data Mining per Community Discovery su Reti Multidimensionali”. Candidate: Filippo Volpini. Advisor: Fosca Giannotti, Kdd-Lab ISTI-CNR Pisa. Co-Advisors: Michele Berlingerio, KDD-Lab ISTI-CNR Pisa, Michele Coscia, Kdd-Lab ISTI-CNR Pisa. Date of graduation: 08/10/2010. Final score 107/110 (thesis score 8/8).
- 2010: Co-Advisor of the B.Sc. thesis of the Laurea in Informatica - University of Pisa, titled “Shortest Path on Multigraphs with Cost Modifiers”. Candidate: Riccardo Guidotti. Advisors: Anna Bernasconi, University of Pisa, Mirco Nanni, KDD-Lab ISTI-CNR Pisa. Date of graduation: 08/10/2010. Final score 110/100 (thesis score 30/30 cum laude).

- 2010: Co-Advisor of the M.Sc. thesis of the Laurea Specialistica in Informatica per l'economia e per l'azienda - University of Pisa, titled "Tecniche di data mining per la scoperta di innovatori tipici nei comportamenti di acquisto nella grande distribuzione". Candidate: Umberto Tocci. Advisors: Elisa Giuliani, Facoltà di Economia University of Pisa, Dino Pedreschi, Department of Computer Science University of Pisa. Co-Advisors: Michele Berlingerio, Kdd-Lab ISTI-CNR Pisa, Michele Coscia, Kdd-Lab ISTI-CNR Pisa, Date of graduation: 12/02/2010. Final score: 110/110 cum laude (thesis score 8/8).

11 Scientific Organization

Organization

- ECML-PKDD 2011: co-chair of the International Workshop on Finding Patterns of Human Behaviors in NETWORK and MOBILITY Data (NEMO). Co-chairs: Albert-László Barabási - CCNR, Northeastern University, USA; Michele Berlingerio - KDD Lab, ISTI-CNR Pisa, Italy; Dino Pedreschi - KDD Lab, Dept. of Computer Science, University of Pisa, Italy; Dashun Wang - CCNR, Northeastern University, USA . Website: <http://kdd.isti.cnr.it/nemo>
- ECML-PKDD 2010: co-chair of the Analysis of Complex NETWORKS (ACNE) workshop. Co-chairs: Björn Bringmann (K.U. Leuven), Andreas Nuernberger (Otto-von-Guericke-University Magdeburg). Website: <http://kdd.isti.cnr.it/acne>
- WSDM 2009, Barcelona: local organization
- ICDM 2008, Pisa: local organization

Program Committee

- PC Member of CIKM 2011, Glasgow
- PC Member of ECML-PKDD 2011, Athens
- PC Member of SIGKDD 2011, San Diego
- PC Member of ECML-PKDD 2010, Barcelona
- PC Member of CIKM 2010, Toronto
- Reviewer for the KAIS Journal

Referee

- External reviewer for several international conferences in Data Mining like: EDBT 2010, WWW 2010, SDM 2010, KDD 2009, PKDD 2009, PKDD 2008, SDM 2008, SDM 2007, PKDD 2006, ICDM 2006

12 Software Development

- Germ: Graph Evolution Rule Miner, a graph miner able to extract frequent graph evolution rules from evolving graph data, in C++. <http://www-kdd.isti.cnr.it/~berlingerio/so/gm/>
- Gamp: Graph Antimonotone Monotone Pruning, a constraint-based pre-processor for graph miners, in C++.
- MessageLib: a library for creating and handling communication channel over a LAN, in C.
- Barrier: a synchronization library among processes running on different machines over a LAN, in C.
- Four-in-a-row: an implementation of the popular game, using NCurses libraries and shared memory among different machines on a LAN, in C.
- Page indexer: a web page indexer for large input data (GBs), in C++.
- Battbench: a battery-consumption based benchmark developed for a Maemo based platform (Nokia N770), in C

13 Computer Science Skills

- **Programming languages:** Fluent in C, C++, Java. Knowledge of Pascal, Lisp, Scheme, Caml.
- **Web:** Experience of HTML, XML, CSS.
- **Databases:** Mysql.
- **Operating Systems:** Windows (up to XP), Linux (major distributions). Knowledge of FreeBSD, Unix.

14 Languages

- Italian: mother-tongue.
- English: excellent, TOEFL IBT certificate, 104/120.
- Spanish: good.
- French: good.
- Swedish: basic.

15 Patents

Patent pending at Yahoo! Research: “Mining Network Evo Rules” (Short Title).

Y! Ref. Y05641US00; GT Ref. 085804-099600

Inventors: Michele Berlingerio, Francesco Bonchi, Bjoern Bringmann, Aristides Gionis.

16 Publications

16.1 Book Chapters

- [1] M. Berlingerio, F. Bonchi, M. Curcio, F. Giannotti, F. Turini. Mining Clinical, Immunological, and Genetic Data of Solid Organ Transplantation. In (Amandeep S. Sidhu and Tharam S.Dillon, Eds.) *Biomedical Data and Applications*, Studies in Computational Intelligence, Volume 224/2009, Springer, 2009. ISBN 978-3-624-02192-3.

16.2 Journals

- [2] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. The Pursuit of Hubbiness: Analysis of Hubs in Large Multidimensional Networks. In *Journal of Computational Science*, Accepted for Publication (in press). Doi: <http://dx.doi.org/10.1016/j.jocs.2011.05.009>.
- [3] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. Evolving Networks: Eras and Turning Points. In *Journal of Intelligent Data Analysis*, Accepted for Publication.
- [4] Michele Berlingerio, Francesco Bonchi, Bjoern Bringmann, Aristides Gionis. Learning and predicting the evolution of social networks. *Intelligent Systems*, Jul/Aug 2010, vol 25, no 4.

16.3 International Conferences

- [5] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. Foundations of Multidimensional Network Analysis. To appear in The 2011 IEEE International Conference on Advances in Social Networks Analysis and Mining, Kaohsiung, Taiwan, July 25-27 2011.
- [6] Michele Berlingerio, Michele Coscia, Fosca Giannotti. Finding and Characterizing Communities in Multidimensional Networks. To appear in The 2011 IEEE International Conference on Advances in Social Networks Analysis and Mining, Kaohsiung, Taiwan, July 25-27 2011.

- [7] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. As Time Goes By: Discovering Eras in Evolving Social Networks. The 14th Pacific-Asia Conference on Knowledge Discovery and Data Mining 21-24 June, 2010 - Hyderabad, India. Springer, Lecture Notes in Artificial Intelligence (LNAI).
- [8] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. Towards Discovery of Eras in Social Networks. Second International Workshop on Modeling, Managing and Mining of Evolving Social Networks (M3SN 2010), in Conjunction with ICDE 2010, Long Beach, CA, USA, March 6 2010. IEEE Computer Society.
- [9] Michele Berlingerio, Francesco Bonchi, Bjoern Bringmann, Aristides Gionis. Mining Graph Evolution Rules. In (Wray L. Buntine and Marko Grobelnik and Dunja Mladenic and John Shawe-Taylor, Eds.): Machine Learning and Knowledge Discovery in Databases, European Conference, ECML PKDD 2009, Bled, Slovenia, September 7-11, 2009, Proceedings, Part I, pp. 115-130, Springer 2009.
- [10] Michele Berlingerio, Michele Coscia, Fosca Giannotti. Mining the Temporal Dimension of the Information Propagation. In (Niall M. Adams, Céline Robardet, Arno Siebes, Jean-François Boulicaut, Eds.): Advances in Intelligent Data Analysis. VIII, 8th International Symposium on Intelligent Data Analysis, IDA 2009, Lyon, France, August 31 - September 2, 2009. Proceedings. Lecture Notes in Computer Science 5772, pp. 237-248, Springer 2009.
- [11] Michele Berlingerio, Fabio Pinelli, Mirco Nanni, Fosca Giannotti. Temporal mining for interactive workflow data analysis. In (John F. Elder IV, Françoise Fogelman-Soulié, Peter A. Flach, Mohammed Javeed Zaki Eds.): Proceedings of the 15th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Paris, France, June 28 - July 1, 2009, pp. 109-118. ACM, 2009.
- [12] Michele Berlingerio, Francesco Bonchi, Fosca Giannotti, Franco Turini. Mining Clinical Data with a Temporal Dimension: A Case Study. Proceedings of the IEEE International Conference on Bioinformatics and Biomedicine, BIBM 2007, Silicon Valley, CA, USA, November 2-4, 2007. pp. 429-436. IEEE Computer Society 2007.
- [13] Michele Berlingerio, Francesco Bonchi, Silvia Chelazzi, Michele Curcio, Fosca Giannotti, Fabrizio Scatena. Mining HLA Patterns Explaining Liver Diseases. 19th IEEE International Symposium on Computer-Based Medical Systems (CBMS 2006), 22-23 June 2006, Salt Lake City, Utah, USA. pp. 702-707. IEEE Computer Society 2006.
- [14] Michele Berlingerio, Francesco Bonchi, Fosca Giannotti, Franco Turini. Time-Annotated Sequences for Medical Data Mining. Workshops Proceedings of the 7th IEEE International Conference on Data Mining (ICDM 2007), October 28-31, 2007, Omaha, Nebraska, USA. pp. 133-138. IEEE Computer Society 2007.

16.4 National Conferences

- [15] Giulio Rossetti, Michele Berlingerio, Fosca Giannotti. Link Prediction in Reti Multi-dimensionali. SEBD 2011, Maratea, Italy.
- [16] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. As Time Goes By: Discovering Eras in Evolving Social Networks. SEBD 2010, Rimini, Italy.
- [17] Michele Berlingerio, Michele Coscia, Fosca Giannotti. Mining the Information Propagation in a Network. In (Barbara Catania, Giovanna Guerrini, Anna Maddalena, Marco Mesiti Eds.): Proceedings of the Seventeenth Italian Symposium on Advanced Database Systems, SEBD 2009, 21-24 June 2009, Camogli, GE, Italy. 2009.
- [18] Michele Berlingerio, Fosca Giannotti, Mirco Nanni, Fabio Pinelli. Temporal analysis of process logs: a case study. In (Salvatore Gaglio, Ignazio Infantino, Domenico Saccà Eds.): Proceedings of the Sixteenth Italian Symposium on Advanced Database Systems, SEBD 2008, 22-25 June 2008, pp. 430-437. Mondello, PA, Italy. 2008. Italy. 2008.
- [19] Michele Berlingerio, Francesco Bonchi, Fosca Giannotti. Towards Constraint-Based Subgraph Mining. In (Michelangelo Ceci, Donato Malerba, Letizia Tanca Eds.): Proceedings of the Fifteenth Italian Symposium on Advanced Database Systems, SEBD 2007, 17-20 June 2007, pp. 274-281. Torre Canne, Fasano, BR, Italy. 2007.

16.5 Technical reports and Project Deliverables

- [20] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. Foundations of Multidimensional Network Analysis. Technical Report cnr.isti/2010-TR-004. 2010
- [21] Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi. Analysis of hubs in large multidimensional networks. Technical Report cnr.isti/2009-TR-042. 2010
- [22] Project Tocai.it. 9. Project report on the testing and refining of the proposed demonstrators – Deliverable D9.3. <http://www.dis.uniroma1.it/~tocai>. July 31 2009.
- [23] Project Tocai.it. WP 9. Project Report on the Integration and Evolution of Process-Discovery and Collaborative Knowledge Discovery Techniques – Deliverable D9.4. <http://www.dis.uniroma1.it/~tocai>. July 31 2009.
- [24] Project Tocai.it. WP 9. Project report describing the design and implementation of a process discovery framework and a collaborative knowledge discovery research demonstrator, and their application in the context of the three scenarios – Deliverable D9.2. <http://www.dis.uniroma1.it/~tocai>. July 31 2008.

- [25] Project Tocai.it. WP 9. Project Report describing scientific results on Process Discovery and Collaborative Knowledge Discovery – Deliverable D9.1. <http://www.dis.uniroma1.it/~tocai>. July 31 2007.

16.6 Theses

PhD

- [26] Michele Berlingerio. Network and Graph Data: Mining the Temporal Dimension. PhD Thesis, IMT Lucca Institute for Advanced Studies, 2009.

M.Sc.

- [27] Michele Berlingerio Pattern discovery su genotipi per l'inferenza di aplotipi responsabili di malattie del fegato. Department of Computer Science, University of Pisa, 2005.