

# Curriculum Vitæ et Studiorum

## of **Luca Virgili**

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*(updated to 19 May 2022)*

This curriculum is structured as follows. Section 1 reports the current position held by Luca Virgili. Section 2 lists his undergraduate and postgraduate studies. Section 3 describes his teaching activity. Section 4 briefly highlights his research fields and his collaborations. Section 5 presents his activity of organization and participation in national and international conferences. Section 6 lists the journals and conferences for which he reviewed scientific articles. Finally, Section 8 presents his scientific publications grouped by categories.

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## 1 Current Position

- Since November 2018, he is a PhD student in Computer Science at the Department of Information Engineering, Università Politecnica delle Marche.

## 2 Undergraduate and Postgraduate Studies

- From 13 to 17 January 2020, he attended the International Winter School on Big Data, held in Ancona (Italy).
- In October 2018, he received the Master Degree in Computer Science and Automation Engineering from the Università Politecnica delle Marche with a grade of 110/110 cum laude, discussing the thesis entitled “A supervised and an unsupervised approach to constructing topic-guided virtual IoTs in a Multiple IoT scenario”.
- From 19 to 24 August 2018, he attended the International Cyber Security Summer School, held in The Hague (Netherlands), in which he presented an overview of the application of Machine Learning in CyberSecurity.
- In October 2016, he received his Bachelor Degree in Computer Science and Automation Engineering from Università Politecnica delle Marche with a grade of 104/110, discussing a thesis entitled “Optimization of Image Classification through Chaotic Neural Networks”. Enrollment in the bachelor’s degree occurred in September 2013.

## 3 Teaching Activity

### 3.1 University Teaching Activities

Since the 2018-19 academic year, he has been actively collaborating in teaching activities at the Università Politecnica delle Marche. He has performed over 60 hours of teaching activities, and 80 hours of teaching support activities as a tutor. Teaching activities are reported below.

- Academic Year 2021-22:
  - Course lecturer of the *Big Data Analytics Lab* course for the Master’s Degree Program in Data Science for Economics and Business in the Department of Economic and

Social Sciences at Università Politecnica delle Marche, for a total of 44 hours (6 CFU).

- Course lecturer of the *Python Lab for Applications* course for the Master’s Degree Program in Data Science for Economics and Business in the Department of Economic and Social Sciences at Università Politecnica delle Marche, totaling 22 hours (3 CFU).
- Teaching tutor activity for the university course *Data Science* for 20 hours.
- Teaching tutor activity for the university course *Advanced Cybersecurity for IT* for 2 hours.

- Academic Year 2020-21:

- Teaching tutor activity for the university course *Data Science* for 20 hours.
- Teaching tutor activity for the university course *Advanced Cybersecurity* for 2 hours.

- Academic Year 2019-20: Teaching tutor activity for the university course *Big Data Analytics laboratory* for 20 hours.

- Academic Year 2018-19: Teaching tutor activity for the university course *Mobile Programming* for 24 hours.

From September 2020 to March 2021, he was nominated tutor for helping the teaching activities of first year university courses for 40 hours, at Università Politecnica delle Marche.

### 3.2 Thesis Supervision

Luca Virgili has been supervisor, at the Università Politecnica delle Marche, of 10 bachelor theses and 5 master theses. Some of the most recent ones are reported below:

- Michele Marchetti, master thesis entitled “Representation, extraction, and use of comment content semantics in a social platform”;
- Paolo Di Massimo, master thesis entitled “Representation and analysis of Convolutional Neural Networks through Social Network Analysis”;
- Iacopo Pacifici, master thesis entitled “Comparative analysis of the healthcare situation in the Marche region to support decision makers”.

### 3.3 Other Teaching Activities

- From March 2022 to May 2022, he was a lecturer in the course “Data Science fundamentals and Machine Learning” hosted by the DBFix company for 14 hours.
- In April 2022, he was a lecturer in the course “*Power BI*” for the online training platform Performativa Academy, for 5 hours.
- In November 2021, he was a lecturer in the master “Strategy and Business Management” hosted by the Institute ISTAO for 8 hours.
- In July 2021, he was a lecturer in the master “Data Science for the enterprise” hosted by the Institute ISTAO for 22 hours.
- In June 2021, he was a lecturer in the course “Business Intelligence” hosted by the XPlace company for 5 hours.
- In April 2021, he was a lecturer in the course “Social Network Analysis” as part of a Fondimpresa project hosted by the FairConnect company for 15 hours.
- In December 2020, he organized a workshop named “Graph Databases and Social Network Analysis” in the course of Data Science held online by Treeschool for 6 hours.
- In October 2020, he was a lecturer in the course “Python advanced” as part of a Fondimpresa project hosted by the Selda Informatica company, for 12 hours.
- In May 2020, he was a lecturer in the course “Software and Management of Big Data systems” as part of a Fondimpresa project hosted by the FairConnect company for 9 hours.
- In September 2020, he was a lecturer in the master “Data Science for the enterprise” hosted by the Institute ISTAO for 24 hours.
- In November of 2019, he was a lecturer in the “Python PTA” course hosted by Università Politecnica delle Marche for 2 hours.
- In December of 2019, he was a lecturer in the course “Environment in Python” as part of a Fondimpresa project hosted by the Selda Informatica company for 12 hours.

- In October 2019, he was a lecturer in the master “Data Science for the enterprise” hosted by the Institute ISTAO for 17 hours.

## 4 Research Activity

### 4.1 Collaborations with Research Institutions and Companies

Luca Virgili has collaborated with research institutions, universities and companies.

- In the national territory, he collaborated with the following research institutions: University of Calabria, Mediterranean University of Reggio Calabria, University of Pavia, and University of Salerno.
- On the international territory, he collaborated with Arizona State University and DBpedia.
- He has been responsible of a research objective in the PON SADABI-IT project collaborating with the company Fater S.p.A.
- He has also collaborated with the following companies in the field of technology transfer: Kibernetes S.r.l., Sisal, Sinergia S.r.l, Jenia S.r.l.

### 4.2 Research

#### 4.2.1 Overview

The most recent research activities of Luca Virgili comprise different fields, such as the Analysis of Complex Networks and Social Networks ([28, 29], [23], [12, 17, 14, 9, 18, 8, 1, 4, 3, 2], [24]), the Internet of Things (IoT) ([20], [27, 30], [6, 11, 15, 19, 16, 7], [25]), and Artificial Intelligence ([13, 5, 10], [22, 21], [26]).

The main field of research is the analysis of complex networks and social networks. The research activities involve the application of Complex Network Analysis and Social Network Analysis techniques to study different contexts. Modeling a problem using a graph representation allows to obtain interesting results in many fields such as the biomedical [23, 18], the technological innovation [17], the Big Data [13], and the classic Social Networks [28, 12, 14, 9].

Another research field of interest is the one regarding Artificial Intelligence. In this case, there are two different research topics. The former regards the application of Machine Learning models to the workspace environment. Specifically, a study of how Machine Learning can be used

effectively in predicting user falls [24]. The latter regards the so-called Explainable AI. Briefly, it consists of the explanation of the paths and the decisions made by a Machine Learning model to provide a particular answer w.r.t. an input. In this setting, he is actually investigating the possible interpretation of deep convolutional neural networks through the Complex Network Analysis and the Multiplex Networks. The aim of this research is to understand the deep network architecture thanks to the analysis of its relevant components, the exploration of patterns and features, the high-level representations and tracking of information flow which all of them could lead to the designing of more efficient and accurate architectures.

Finally, in the IoT context, a new field of research is the one called Multiple IoT (MIoT), which is a vision of the IoT as a set of subnets capable of interacting with each other through *cross object* [19, 20]. Several properties have been studied in this line of research, such as the definition and study of anomalies [6], the concept of *scope* [27, 11], trust and reputation properties of smart objects [16, 25] and an approach to ensure user privacy [15].

#### 4.2.2 Further Research Topics

Thanks to the Google Summer of Code<sup>1</sup> program that supports the development of open source software, Luca Virgili has been able to collaborate for several years with DBpedia on Ontology Management, Natural Language Processing and Knowledge Graph. The details of these projects are reported below.

- In 2021, he was a Mentor for the projects “Social Knowledge Graph: Employing SNA measures to Knowledge Graph”<sup>2</sup> and “User Centric Knowledge Engineering and Data Visualization”<sup>3</sup>.
- In 2020, he was a Mentor for the project “Dashboard for Language/National Knowledge Graphs”<sup>4</sup>.
- In 2019, he was a Mentor for the project “Workflow for linking External datasets”<sup>5</sup>, from which he was able to derive two publications [22, 21].

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<sup>1</sup><https://summerofcode.withgoogle.com/>

<sup>2</sup><https://github.com/dbpedia/social-knowledge-graph>

<sup>3</sup><https://github.com/dbpedia/gsoc-dbpedi-dashbord>

<sup>4</sup><https://github.com/dbpedia/gsoc-2020-dashbord>

<sup>5</sup><https://github.com/dbpedia/linking>

- In 2018, he was a Mentor for the project “Fusing the List Extractor and the Table Extractor”<sup>6</sup>.
- In 2017, he was a Student Developer for the project “Table extractor”<sup>7</sup>.

## 5 Organization and Participation to National and International Conferences

### 5.1 Organization of Conferences

- He was a Organization Chair of the 1<sup>st</sup> International Workshop on Digital Platforms and Resources for Access to Literary Heritage (DIPRAL22), co-located with the 26<sup>th</sup> International Conference on Theory and Practice of Digital Libraries (TPDL22), held in Padova (Italy) from 20 to 23 September 2022.
- He was Publication Chair of the 1<sup>st</sup> International Virtual Conference on Visual Pattern Extraction and Recognition for Cultural Heritage Understanding (VIPERC22), virtually held from 12 to 13 September 2022.
- He was a Session Chair of the 29<sup>th</sup> Italian Symposium on Advanced Database Systems (SEBD21), held in Pizzo Calabro (Italy) from 5 to 9 September 2021.
- He was a member of the organizing committee of the International Winter School on Big Data, held in Ancona (Italy) from 13 to 17 January 2020.

### 5.2 Member of the Program Committee

- He was a member of the Program Committee of the 29<sup>th</sup> Italian Symposium on Advanced Database Systems held in Pizzo Calabro (Italy) from 5 to 9 September 2021.
- He was a member of the Program Committee of the 10<sup>th</sup> International Conference on Soft Computing, Artificial Intelligence and Applications (SAI21) held in London (UK) from 24 to 25 July 2021.

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<sup>6</sup><https://github.com/dbpedia/tablist-extractor>

<sup>7</sup><https://github.com/dbpedia/table-extractor>



- He was a member of the Program Committee of the 2<sup>nd</sup> International Conference on Blockchain and Internet of Things (BIoT21) held in Copenhagen (Denmark) from 19 to 20 June 2021.
- He was a member of the Program Committee of the 6<sup>th</sup> International Conference on Artificial Intelligence and Soft Computing (AISO20) held in Dubai from 24 to 25 October 2020.
- He was a member of the Program Committee of the 1<sup>st</sup> International Conference on Big Data, IoT and Blockchain (BIBC 2020) held in Dubai from 24 to 25 October 2020.
- He was a member of the Program Committee of the 3<sup>rd</sup> Artificial Intelligence Techniques for BioMedicine and HealthCare (AIBH20) held online from 16 to 19 December 2020.

### 5.3 Presentation of Scientific Articles

Luca Virgili presented the following scientific papers at the respective conferences:

- P. Lo Giudice, D. Ursino, L. Virgili. A “big data oriented” and “complex network based” model supporting the uniform investigation of heterogeneous personalized medicine data. In Proc. of International Conference on Bioinformatics and Biomedicine (BIBM18), Madrid, Spain, 3 December 2018.
- F. Cauteruccio, E. Corradini, G. Terracina, D. Ursino, L. Virgili. Co-posting Author Assortativity in Reddit. In Proc. of Italian Symposium on Advanced Database Systems (SEBD20), Villasimius (Italy), 24 June 2020.
- E. Corradini, S. Nicolazzo, A. Nocera, D. Ursino and L. Virgili. Increasing protection and autonomy in the IoT through a two-tier blockchain framework. In Proc. of Italian Symposium on Advanced Database Systems (SEBD21), Pizzo Calabro (Italy), 6 September 2021.

## 6 Reviewing Activity of Scientific Articles

Luca Virgili has been a reviewer of scientific articles for the following international journals (in alphabetical order):

- Applied Computing and Informatics.
- Future Generation Computer Systems.
- IEEE Access.
- IEEE Intelligent Systems.
- Information Sciences.
- Information Processing & Management.
- Knowledge-Based Systems.
- Multimedia Tools and Applications.
- Social Science Computer Review.
- Wireless Networks.

Luca Virgili has been a reviewer of scientific articles for the following international conferences (in alphabetical order):

- International Conference on Artificial Intelligence and Soft Computing (AISO20).
- International Conference on Big Data Analytics and Knowledge Discovery (DaWaK21).
- International Conference on Big Data, IOT and Blockchain (BIBC20).
- International Conference on Blockchain and Internet of Things (BIoT20).
- International Conference on Computer Science and Application Engineering (CSAE20).
- International Conference on Soft Computing, Artificial Intelligence and Applications (SAI21).

Luca Virgili has been a reviewer of scientific articles for the following national workshops and conferences (in alphabetical order):

- Artificial Intelligence Techniques for BioMedicine and HealthCare (AIBH20).
- Italian Symposium on Advanced Database Systems (SEBD21).

Luca Virgili was a reviewer of scientific articles for the Special Issue “Semantic modelling and design patterns for IoT ecosystems” of the Future Generation Computer Systems journal.

## 7 Honors and Awards

- “Maurizio Panti” award won during the Hackton “HackUNIVPM” hosted by the Università Politecnica delle Marche from 30<sup>th</sup> November to 1<sup>st</sup> December 2017.
- “Facile.it” award for completeness of the prototype won during the Hackton “HackUNIVPM” hosted by the Università Politecnica delle Marche from 30<sup>th</sup> November to 1<sup>st</sup> December 2017.

## 8 List of Publications

### International Journal

- [1] G. Bonifazi, E. Corradini, D. Ursino, and L. Virgili. A Social Network Analysis based approach to investigate user behavior during a cryptocurrency speculative bubble. *Journal of Information Science*, Forthcoming. SAGE.
- [2] G. Bonifazi, F. Cauteruccio, E. Corradini, M. Marchetti, G. Terracina, D. Ursino, and L. Virgili. Representation, detection and usage of the content semantics of comments in a social platform. *Journal of Information Science*, page 01655515221087663, 2022. SAGE Publications.
- [3] G. Bonifazi, E. Corradini, D. Ursino, and L. Virgili. Defining user spectra to classify Ethereum users based on their behavior. *Journal of Big Data*, 9(1):1–39, 2022. Springer.
- [4] F. Cauteruccio, E. Corradini, G. Terracina, D. Ursino, and L. Virgili. Extraction and analysis of text patterns from NSFW adult content in Reddit. *Data & Knowledge Engineering*, page 101979, 2022. Elsevier.
- [5] G. Bonifazi, E. Corradini, D. Ursino, L. Virgili, E. Anceschi, and M. Callisto De Donato. A machine learning based sentient multimedia framework to increase safety at work. *Multimedia Tools and Applications*, pages 1–29, 2021. Springer.
- [6] F. Cauteruccio, L. Cinelli, E. Corradini, G. Terracina, D. Ursino, L. Virgili, G. Fortino, A. Liotta, and C. Savaglio. A framework for anomaly detection and classification in Multiple IoT scenarios. *Future Generation Computer Systems*, 114:322–335, 2021. Elsevier.

- [7] E. Corradini, S. Nicolazzo, A. Nocera, D. Ursino, and L. Virgili. A two-tier Blockchain framework to increase protection and autonomy of smart objects in the IoT. *Computer Communications*, 181:338–356, 2021. Elsevier.
- [8] E. Corradini, A. Nocera, D. Ursino, and L. Virgili. Investigating negative reviews and detecting negative influencers in Yelp through a multi-dimensional social network based model. *International Journal of Information Management*, 60:102377, 2021. Elsevier.
- [9] E. Corradini, A. Nocera, D. Ursino, and L. Virgili. Investigating the phenomenon of NSFW posts in Reddit. *Information Sciences*, 566:140–164, 2021. Elsevier.
- [10] E. Corradini, G. Porcino, A. Scopelliti, D. Ursino, and L. Virgili. Fine-tuning SalGAN and PathGAN for extending saliency map and gaze path prediction from natural images to websites. *Expert Systems with Applications*, page 116282, 2021. Elsevier.
- [11] F. Cauteruccio, L. Cinelli, G. Fortino, C. Savaglio, G. Terracina, D. Ursino, and L. Virgili. An Approach to Compute the Scope of a Social Object in a Multi-IoT Scenario. *Pervasive and Mobile Computing*, 67:101223, 2020. Elsevier.
- [12] F. Cauteruccio, E. Corradini, G. Terracina, D. Ursino, and L. Virgili. Investigating Reddit to detect subreddit and author stereotypes and to evaluate author assortativity. *Journal of Information Science*, 0(0):1—28, 2020. SAGE.
- [13] F. Cauteruccio, P. Lo Giudice, L. Musarella, G. Terracina, D. Ursino, and L. Virgili. A Lightweight Approach to Extract Interschema Properties from Structured, Semi-Structured and Unstructured Sources in a Big Data Scenario. *International Journal of Information Technology & Decision Making*, 0(0):1–41, 2020. World Scientific Publishing.
- [14] E. Corradini, A. Nocera, D. Ursino, and L. Virgili. Defining and detecting k-bridges in a social network: the Yelp case, and more. *Knowledge-Based Systems*, 187:104820, 2020. Elsevier.
- [15] S. Nicolazzo, A. Nocera, D. Ursino, and L. Virgili. A privacy-preserving approach to prevent feature disclosure in an IoT scenario. *Future Generation Computer Systems*, 105:502–519, 2020.
- [16] D. Ursino and L. Virgili. An approach to evaluate trust and reputation of things in a Multi-IoTs scenario. *Computing*, 102:2257–2298, 2020. Springer.

- [17] C. Donato, P. Lo Giudice, R. Marretta, D. Ursino, and L. Virgili. A well-tailored centrality measure for evaluating patents and their citations. *Journal of Documentation*, 75(4):750–772, 2019. Emerald.
- [18] P. Lo Giudice, N. Mammone, F.C. Morabito, R.G. Pizzimenti, D. Ursino, and L. Virgili. Leveraging Network Analysis to support experts in their analyses of subjects with MCI and AD. *Medical & Biological Engineering & Computing*, 57(9):1961–1983, 2019. Springer.
- [19] P. Lo Giudice, A. Nocera, D. Ursino, and L. Virgili. Building Topic-Driven Virtual IoTs in a Multiple IoTs Scenario. *Sensors*, 19(13):2956, 2019. MDPI.

## International Conferences and Workshops

- [20] F. Cauteruccio, G. Terracina, D. Ursino, and L. Virgili. Redefining Betweenness Centrality in a Multiple IoT Scenario. In *Proc. of the Workshop on Artificial Intelligence and Internet of Things co-located with the 18th International Conference of the Italian Association for Artificial Intelligence (AI\*IA 2019)*, pages 16–27, Rende, Calabria, Italy.
- [21] J. Chakraborty, B. Yaman, L. Virgili, K. Konar, and S.K. Bansal. OntoConnect: Unsupervised Ontology Alignment with Recursive Neural Network. In *Proc. of the Symposium On Applied Computing (SAC21)*, 2021. ACM.
- [22] J. Chakraborty, B. Yaman, L. Virgili, K. Konar, and S.K. Bansal. OntoConnect: Results for OAEI 2020. *Ontology Matching*, page 204, 2020.
- [23] P. Lo Giudice, D. Ursino, and L. Virgili. A “big data oriented” and “complex network based” model supporting the uniform investigation of heterogeneous personalized medicine data. In *Proc. of the International Conference on Bioinformatics and Biomedicine (BIBM’18)*, pages 2094–2101, Madrid, Spain, 2018. IEEE.

## Book chapters

- [24] E. Anceschi, G. Bonifazi, M. Callisto De Donato, E. Corradini, D. Ursino, and L. Virgili. SaveMeNow.AI: a Machine Learning based wearable device for fall detection in a workplace. *Enabling AI applications in Data Science*. Springer Nature.

- [25] D. Ursino and L. Virgili. Humanizing IoT: defining the profile and the reliability of a thing in a Multi-IoT scenario. *Towards Social Internet of Things: Enabling Technologies, Architectures and Applications. Studies in Computational Intelligence*, 846:51–76, 2020. Springer Nature.

## National Conferences and Workshops

- [26] G. Bonifazi, E. Corradini, G. Porcino, A. Scopelliti, D. Ursino, and L. Virgili. Applying Generative Adversarial Networks to perform gaze path prediction in websites. In *Proc. of 29th Italian Symposium on Advanced Database Systems (SEBD21)*, Pizzo Calabro, Calabria, Italy.
- [27] F. Cauteruccio, L. Cinelli, G. Terracina, D. Ursino, and L. Virgili. Investigating the scope of a thing in a multiple Internet of Things scenario. In *Proc. of 27th Italian Symposium on Advanced Database Systems (SEBD19)*, Grosseto, Tuscany, Italy.
- [28] F. Cauteruccio, E. Corradini, G. Terracina, D. Ursino, and L. Virgili. Co-posting Author Assortativity in Reddit. In *Proc. of 28th Italian Symposium on Advanced Database Systems (SEBD20)*, Villasimius, Sardinia, Italy.
- [29] F. Cauteruccio, E. Corradini, G. Terracina, D. Ursino, and L. Virgili. An investigation on not safe for work adult content in reddit. In *Proc. of 29th Italian Symposium on Advanced Database Systems (SEBD21)*, Pizzo Calabro, Calabria, Italy.
- [30] E. Corradini, S. Nicolazzo, A. Nocera, D. Ursino, and L. Virgili. Increasing protection and autonomy in the IoT through a two-tier blockchain framework. In *Proc. of 29th Italian Symposium on Advanced Database Systems (SEBD21)*, Pizzo Calabro, Calabria, Italy.