

Curriculum



Nome Name:	Giulio
Cognome Surname:	CIMINI

ORCID:	0000-0001-5698-8597
Scopus Author ID:	n.d.
WOS Author ID:	n.d.
Sito WEB WEB site:	https://www.giuliocimini.com

POSIZIONE PROFESSIONALE ATTUALE / CURRENT PROFESSIONAL POSITION:

Posizione attuale Current position:	In servizio
Qualifica Qualification:	Professore Associato (L. 240/10)
Ateneo/Ente/Azienda University/Institution/Company:	Università degli Studi di ROMA "Tor Vergata"
Nazione Ateneo/Ente/Azienda University/Institution/Company Country:	ITA
Anno inizio Start Year:	2022
Anno fine End Year:	n.d.

PRECEDENTI ESPERIENZE LAVORATIVE (ULTIMI 10 ANNI) / PREVIOUS WORK EXPERIENCE (LAST 10 YEARS):

LINGUE / LANGUAGES:

Lingua Language:	Inglese
Scrittura Writing:	C2
Comunicazione Communication:	C2

AREA/SETTORE SCIENTIFICO-DISCIPLINARE / AREA/SECTOR SCIENTIFIC-DISCIPLINARY

Area scientifico-disciplinare Area scientific-disciplinary:	Scienze fisiche
Area scientifico-disciplinare codice Area scientific-disciplinary code:	02
Settore scientifico-disciplinare codice Sector scientific-disciplinary code:	-Fisica teorica delle interazioni fondamentali, modelli, metodi matematici e applicazioni
Settore scientifico-disciplinare codice Sector scientific-disciplinary code:	-PHYS-02/A

DESCRIZIONE DEI PRINCIPALI RISULTATI SCIENTIFICI CONSEGUITI NEGLI ULTIMI 10 ANNI (CON ANNESSO ELENCO DI MASSIMO 10 PUBBLICAZIONI) / DESCRIPTION OF THE MAIN SCIENTIFIC RESULTS ACHIEVED IN THE LAST 10 YEARS (WITH ATTACHED LIST OF MAXIMUM 10 PUBLICATIONS):

Descrizione Description:	<p><i>My research activity lies at the cutting edge of the statistical physics of networks and socio-economic applications. I have advances state-of-the-art in formulating and solving statistical physics models of complex networks with heterogeneous local constraints, capable of describing complex heterogeneous structures. Results in the field include developing the Grand Canonical ensemble of weighted networks and devising efficient likelihood maximization procedures for linear Exponential Random Graph (ERG) models. These models serve as null to reconstruct networks from partial information or to perform statistical hypothesis testing. Concerning the first aspect, I have advanced knowledge in the field of financial (interbank) network reconstruction. I introduced a heuristic method to reconstruct sparse topologies without knowing nodes' connectivity. As shown by research from central banks, this "Cimi" method outperforms competing methods in accurately reconstructing interbank networks. I further extended the method to bipartite ownership networks and made it more rigorous within the ERG framework. Besides I am expert in applications of statistical physics to study the topology and dynamics of financial networks, which have received considerable attention after the 2008 crisis A notable work was done in collaboration with CC&G (now Euronext clearing), the Central Counterparty (CCP) operating in Italy.</i></p>
-----------------------------	---

	<p><i>We developed a network-based stress test for CCPs that has been adopted by CC&G to adequately gauge its default fund. Other work includes studying liquidity contagion, dimensional reduction of systemic risk and the relation between network topology and resilience. Concerning the second aspect, I have developed ERG-based tools for statistical validation of bipartite network projections, useful for instance to detect risky portfolio overlaps or common capabilities between innovation activities. The latter application has fueled several activities in the Economic Complexity domain, to measure “relatedness” between scientific, technological and industrial production, leading to accurate forecasts of economic growth. My recent focus is on firm-level production networks. I have found evidence of functional structures in these systems and used a refined “Cimi” method (reproducing the input by sector of each firm) to accurately infer systemic risk of individual firms. We further show that such method defines an equilibrium model based on the input-output demand of each firm by sector, so it can capture the market structure in normal times, but deviations appear after systemic events. Recently I also worked on the impact of social network activity on financial market, specifically for the famous case of the GameStop short squeeze, I showed the existence of a causality relation between the activity of Reddit users, who orchestrated a collective financial action, and the sudden increase of the stock price, and proposed a model for such dynamics.</i></p>
--	--

PUBBLICAZIONI / PUBLICATIONS:

Anno della pubblicazione Year of publication:	2019
Citazione Citation:	Cimini, Giulio, Squartini, Tiziano, Saracco, Fabio, Garlaschelli, Diego, Gabrielli, Andrea, Caldarelli, Guido (2019). The statistical physics of real-world networks. NATURE REVIEWS PHYSICS, vol. 1, p. 58-71, ISSN: 2522-5820, doi: 10.1038/s42254-018-0002-6

Anno della pubblicazione Year of publication:	2021
Citazione Citation:	Bardoscia, M., Barucca, P., Battiston, S., Caccioli, F., Cimini, G., Garlaschelli, D., Saracco, F., Squartini, T., Caldarelli, G. (2021). The physics of financial networks. NATURE REVIEWS PHYSICS, vol. 3, p. 490-507, ISSN: 2522-5820, doi: 10.1038/s42254-021-00322-5

Anno della pubblicazione Year of publication:	2015
Citazione Citation:	Cimini G, Squartini T, Garlaschelli D, Gabrielli A (2015). Systemic risk analysis on reconstructed economic and financial networks. SCIENTIFIC REPORTS, vol. 5, 15758, ISSN: 2045-2322, doi:

	10.1038/srep15758
Anno della pubblicazione Year of publication:	2019
Citazione Citation:	PUGLIESE E, CIMINI G, PATELLI A, ZACCARIA A, PIETRONERO L, GABRIELLI A (2019). Unfolding the innovation system for the development of countries: coevolution of Science, Technology and Production. SCIENTIFIC REPORTS, vol. 9, ISSN: 2045-2322, doi: 10.1038/s41598-019-52767-5
Anno della pubblicazione Year of publication:	2018
Citazione Citation:	Squartini, Tiziano, Caldarelli, Guido, Cimini, Giulio, Gabrielli, Andrea, Garlaschelli, Diego (2018). Reconstruction methods for networks: The case of economic and financial systems. PHYSICS REPORTS, vol. 757, p. 1-47, ISSN: 0370-1573, doi: 10.1016/j.physrep.2018.06.008
Anno della pubblicazione Year of publication:	2021
Citazione Citation:	Serafino, Matteo, Cimini, Giulio, Maritan, Amos, Rinaldo, Andrea, Suweis, Samir, Banavar, Jayanth R., Caldarelli, Guido (2021). True scale-free networks hidden by finite size effects. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 118, e2013825118, ISSN: 0027-8424, doi: 10.1073/pnas.2013825118
Anno della pubblicazione Year of publication:	2022
Citazione Citation:	Mancini, Anna, Desiderio, Antonio, Di Clemente, Riccardo, Cimini, Giulio (2022). Self-induced consensus of Reddit users to characterise the GameStop short squeeze. SCIENTIFIC REPORTS, vol. 12, 13780, ISSN: 2045-2322, doi: 10.1038/s41598-022-17925-2
Anno della pubblicazione Year of publication:	2022
Citazione Citation:	Cimini Giulio, Carra Alessandro, Didomenicantonio Luca, Zaccaria Andrea (2022). Meta-validation of bipartite network projections. COMMUNICATIONS PHYSICS, vol. 5, ISSN: 2399-3650, doi: 10.1038/s42005-022-00856-9
Anno della pubblicazione Year of publication:	2019
Citazione Citation:	GABRIELLI A, MASTRANDREA R, CALDARELLI G, CIMINI G (2019). Grand canonical ensemble of weighted networks. PHYSICAL REVIEW. E, vol. 99, ISSN: 2470-0053, doi: 10.1103/PhysRevE.99.030301

Anno della pubblicazione Year of publication:	2018
Citazione Citation:	Giulia Poce, Giulio Cimini, Andrea Gabrielli, Andrea Zaccaria, Giuditta Baldacci, Marco Polito, Mariangela Rizzo, Silvia Sabatini (2018). What do central counterparty default funds really cover? A network-based stress test answer. THE JOURNAL OF NETWORK THEORY IN FINANCE, vol. 4, p. 43-57, ISSN: 2055-7795, doi: 10.21314/JNTF.2018.047

DESCRIZIONE DEI PRINCIPALI PROGETTI DI RICERCA E PREMI CONSEGUITI NEGLI ULTIMI 10 ANNI (CON ANNESSO ELENCO DI MASSIMO 10 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, PRINCIPAL INVESTIGATOR O COORDINATORE LOCALE DI PROGETTI DI RICERCA COMPETITIVI NAZIONALI O INTERNAZIONALI, SIGNIFICATIVI PREMI CONSEGUITI PER LA PROPRIA ATTIVITÀ DI RICERCA)/ DESCRIPTION OF THE MAIN RESEARCH PROJECTS AND AWARDS AWARDED IN THE LAST 10 YEARS (WITH ATTACHED LIST OF MAXIMUM 10 ACHIEVEMENTS, INCLUDING, FOR EXAMPLE, PRINCIPAL INVESTIGATOR OR LOCAL COORDINATOR OF NATIONAL OR INTERNATIONAL COMPETITIVE RESEARCH PROJECTS, SIGNIFICANT AWARDS AWARDED FOR YOUR RESEARCH ACTIVITY):

Descrizione Description:	
-----------------------------	--

Descrizione Description:	Principal Investigator of project "C2T - From Crises to Theory" - MUR PRIN PNRR (Progetti di Ricerca di Rilevante Interesse Nazionale) 2022
-----------------------------	---

Descrizione Description:	Co-Principal Investigator of project "RENet - Reconstructing economic networks" - MUR PRIN (Progetti di Ricerca di Rilevante Interesse Nazionale) 2022
-----------------------------	--

DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI DI SVILUPPO DI RETI E RELAZIONI SCIENTIFICHE NAZIONALI E INTERNAZIONALI (CON ANNESSO ELENCO DI MASSIMO 5 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, PARTECIPAZIONE O ORGANIZZAZIONE DI CONVEGNI NAZIONALI E INTERNAZIONALI; CONTRIBUTI A CONSORZI DI RICERCA) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF DEVELOPMENT OF NATIONAL AND INTERNATIONAL SCIENTIFIC NETWORKS AND RELATIONS (WITH ATTACHED LIST OF MAXIMUM 5 RESULTS, INCLUDING,

FOR EXAMPLE, PARTICIPATION OR ORGANIZATION OF NATIONAL AND INTERNATIONAL CONFERENCES; CONTRIBUTIONS TO RESEARCH CONSORTIA):

Descrizione Description:	
-----------------------------	--

Descrizione Description:	General chair of NetSciX2024 - International School and Conference on Network Science (Venice, Italy, 22-25/01/2024)
-----------------------------	--

Descrizione Description:	General chair of NetSci2020 - International School and Conference on Network Science (Rome, Italy, 17-25/09/2020 - online)
-----------------------------	--

Descrizione Description:	Organizer of workshop series “#FinEcoNets” (14 editions in StatPhys, NetSci and CCS conferences)
-----------------------------	--

Descrizione Description:	Organizer of workshop series “Complex Networks: From Socio-Economic Systems to Biology and Brain” (7 editions)
-----------------------------	--

DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI DI SUPPORTO ALLA COMUNITÀ SCIENTIFICA (CON ANNESSO ELENCO DI MASSIMO 5 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, RESPONSABILITÀ DI DIREZIONE DI COMITATI EDITORIALI; INCARICHI DI VALUTAZIONE DELLA RICERCA PRESSO ISTITUZIONI NAZIONALI O INTERNAZIONALI; RESPONSABILITÀ ISTITUZIONALI ALL'INTERNO DELL'ISTITUZIONE DI APPARTENENZA O DI ALTRE ISTITUZIONI) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF SUPPORT TO THE SCIENTIFIC COMMUNITY (WITH ATTACHED LIST OF MAXIMUM 5 RESULTS, INCLUDING, FOR EXAMPLE, MANAGEMENT RESPONSIBILITIES OF EDITORIAL COMMITTEES; RESEARCH EVALUATION ROLES AT NATIONAL OR INTERNATIONAL INSTITUTIONS; INSTITUTIONAL RESPONSIBILITIES WITHIN THE INSTITUTION OF AFFILIATION OR OTHER INSTITUTIONS):

Descrizione Description:	
-----------------------------	--

Descrizione Description:	AA 22/23 to 24/25: Board member for PhD in Data Science (Università Tor Vergata)
-----------------------------	--

Descrizione Description:	AA 20/21 to 24/25: Member of Steering Committee for Teaching (Physics Dept., Università Tor Vergata)
-----------------------------	--

Descrizione Description:	AA 17/18 to 20/21: Board member for PhD in Data Science (Scuola Normale Superiore, Pisa)
-----------------------------	--

Descrizione Description:	Since 2022: Associate editor for Frontiers in Physics - Interdisciplinary Physics (ISSN 2296-424X)
-----------------------------	--

Descrizione Description:	2018 - 2022: Editorial Board member for Complexity (ISSN 1099-0526)
-----------------------------	---

DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI VALORIZZAZIONE DELLE CONOSCENZE (CON ANNESSO ELENCO DI MASSIMO 3 RISULTATI, RELATIVI ALLA PARTECIPAZIONE DEL CANDIDATO ALLE ATTIVITÀ DI VALORIZZAZIONE DELLE CONOSCENZE) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF KNOWLEDGE VALORIZATION (WITH ATTACHED LIST OF MAXIMUM 3 RESULTS, RELATING TO THE CANDIDATE'S PARTICIPATION IN KNOWLEDGE VALORIZATION ACTIVITIES):

Descrizione Description:	
-----------------------------	--

Informazioni aggiornate alla data di candidatura 12-05-2025

Giulio CIMINI

Il presente curriculum costituisce allegato e parte integrante dell'incarico sottoscritto