Diogo F. Pacheco

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EDUCATION

08/13 – 12/17   *Doctor of Philosophy*, **Computer Science, GPA 3.88/4**
Florida Institute of Technology, Melbourne, FL - USA.
Area: Data Science / Network Science
Thesis: "Information Densification of Social Constructs via Behavior Analyses of Social Media Users - A Study on Twitter"

08/06 – 07/08   *Master of Science*, **Computer Engineering, GPA 3.5/4**
Polytechnic School of Pernambuco, Recife – PE, Brazil.
Area: Computational Intelligence and Multi-Objective Optimization
Dissertation: "*An Evolutionary Multi-Objective Approach to Decision Support in Sugarcane Harvest*"

08/01 – 07/06   *Bachelor of Science*, **Computer Engineering, CPI 8.38/10**
Polytechnic School of Pernambuco, Recife – PE, Brazil.
Dissertation: "*Decision Support in Intelligent Systems for Agricultural Crops*"

CONTINUING EDUCATION

09/14 – 11/14   **Social Psychology**
Wesleyan University (via Coursera.org)

AWARDS

2017   **Outstanding Student of the Year**
Florida Institute of Technology, Melbourne, FL - USA.

2016   **UPE Honors Society**
Invitation to Upsilon Pi Epsilon (UPE) honours society for the computing sciences due to outstanding academic achievement.

SKILLS

Programming: Python, C#, Java, SQL, NoSQL, R, Matlab.
Software: QGIS, ScapeToad (Cartograms), Gephi, MongoDB, MySQL, Visual Studio, Eclipse, R Studio, Git, Latex.
Languages: English, Portuguese.

WORK EXPERIENCE

2020 – present   *Lecturer at the University of Exeter*
Lecturer in Data Science and Computer Science (Education and Research), College of Engineering, Mathematics and Physical Sciences.

2018 – 2020   *Postdoctoral Fellow at Indiana University*
Postdoctoral Fellow at the Center for Complex Networks and Systems Research (CNetS) at Indiana University (Bloomington) under the supervision of YY Ahn, Fil Menczer and Alessandro Flammini. Working on the **SocialSim DARPA Grant**, aiming to develop a cognitive agent simulation framework for studying social behaviour in online information environments. This project is a collaboration with colleagues at the USC Information Sciences Institute (Emilio Ferrara, PI; Kristina Lerman and Jim Blythe, co-PIs) and the University of Notre Dame (Tim Weninger, co-PI). Also an active collaborator of the **Observatory on Social Media** (OSoMe) project and its tools.

2017 – 2017   *Army Research Office (ARO) at FIT*

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Graduate research assistant of the "Predicting Human Dynamics under Restrictions of Partial or Incomplete Information" project, an **Army Research Office Grant**. This collaboration between the PI's Prof. Gourab Goshal at the University of Rochester and Prof. Ronaldo Menezes at Florida Tech. We are using Information Theory, Complex Networks, and Machine Learning to delve into better predictive models of human mobility.

2016 – 2017   *Civil Engineering-Construction Mgmt Department at FIT*
Graduate research assistant of the Florida Public Hurricane Loss Model (FPHLM) project. I have to elicit requirements from interviews with the client, design and implement the system responsible for generating the weighted-vulnerability matrices.

2014 – 2014   *Civil Engineering-Construction Mgmt Department at FIT*
During Summer, I worked as a webmaster and implemented flow charts of the Florida Public Hurricane Loss Model (FPHLM).

2010 – 2013   *Radix Software and Engineering*
I worked on several software development projects, mainly in the Oil & Gas, Entertainment and Steel industries. I actuated in many different phases of the development process as project coordinator, business analyst, and test leader.

2008 – 2010   *Chemtech – A Siemens Business*
I worked on several software development projects, mainly in the steel industry and power sector, as a business analyst, software developer and test leader.

2004 – 2007   *CESAR – Center of Studies and Advanced Systems from Recife*
I began my software development career focusing on coding, requirements, and tests. I worked on web-based projects and mobile development.

2001 – 2001   *JAMBO –Entrance Preparation Courses*
Tutoring math and physics for college entrance preparation courses.

PRESENTATIONS

05/2022   **Why does social media make us vulnerable to misinformation?**
Pint of Science 2022.

10/2021   **Why does social media make us vulnerable to misinformation?**
Exeter Summit 2021.

07/2021   In: Exeter School on Urban Analytics - Social Media Mining Module
Twitter Data
Reconstructing Social Networks
Misinformation

06/2021   **Hidden Bias and Coordination on Social Media**
Invited talk to SPAC lab, Lisbon, Portugal.

05/2021   **A Computação na Guerra Contra as Fake News**
In: Semana da Computação, Universidade Católica do Recife

06/2020   In: The 6th International Conference on Computational Social Science (IC2S2).
Tutorial: Identifying social media manipulation with OSoMe tools
What is going on Brazil? A Political Tale from Tweets.
Hidden Bias in Social Media

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04/2020   **Unveiling Coordinated Groups Behind White Helmets Disinformation.**
In: The Fifth Workshop on Computational Methods in Online Misbehavior.

03/2020   **Five ways social media make us vulnerable to misinformation.**
Invited Guest Lecturer to Digital Marketing at the Kelley School of Business at IU.

12/2019   **What is going on Brazil? A Political Tale from Tweets.**
In: The 8th International Conference on Complex Networks and their Applications. Lisbon, Portugal, 2019.

11/2019   **Five ways social media make us vulnerable to misinformation.**
Invited Honors Guest Lecturer to Luddy SICE H101 at Indiana University (IU).
Invited Guest Lecturer to Digital Marketing at the Kelley School of Business at IU.
Invited Guest Lecturer to Informatics I101 at IU.

10/2017   **Information Densification of Social Constructs via Behavior Analysis of Social Media Users - A Study on Twitter.**
In: School of Computing Seminar Series at Florida Institute of Technology.

06/2017   **Using Social Media to Assess Neighborhood Social Disorganization: A Case Study in the United Kingdom.**
In: 2nd NetCrime: Symposium on the Structure and Mobility of Crime, a NetSci2017 Satellite, Indianapolis, USA.

05/2017   **Language as a Measure of Welfare.**
In: 30th Florida Artificial Intelligence Research Society Conference, Marco Island, USA.

05/2017   **Using Social Media to Assess Neighborhood Social Disorganization: A Case Study in the United Kingdom.**
In: 30th Florida Artificial Intelligence Research Society Conference, Marco Island, USA.

07/2015   **Football Conversations: What Twitter Reveals about the 2014 World Cup.**
In: 30th Florida Artificial Intelligence Research Society Conference, Marco Island, USA.

01/2015   **Dynamics of Fans Borders During 2014 FIFA World Cup.**
In: NetSciX 2015: International School and Conference on Network Science, Rio de Janeiro/Brazil.

05/2014   **Using Interactions in the Quantification of Media Bias.**
In: 2014 ASE BIGDATA/SOCIALCOM/CYBERSECURITY Conference, Stanford University, *Stanford/USA*.

09/2008   **How Preferences Affect Productivity in the Sugarcane Harvest Problem a Comparative Study of a Two-Steps MOEA.**
In: 8th International Conference on Hybrid Intelligent Systems, Barcelona/Spain, 2008.

05/2008   **Including Multi-Objective Abilities in the Hybrid Intelligent Suite for Decision Support.**
In: 2008 World Congress In Computational Intelligence (IJCNN - International Joint Conference On Neural Networks), Hong Kong/China.

PUBLICATIONS

2022   1. DeVerna, M.; Aiyappa, R.; *Pacheco, D.*; Bryden, J.; Menczer, F.. *Identification and characterization of misinformation superspreaders on social media*. arXiv preprint arXiv:2207.09524.

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2. **Pacheco, D**., Oliveira, M., Chen, Z., Barbosa, H., Foucault-Welles, B., Ghoshal, G., & Menezes, R. (2022). *Predictability states in human mobility*. arXiv preprint arXiv:2201.01376.

2021   3. Chen, W., **Pacheco, D.**, Yang, K. C., & Menczer, F. (2021). *Neutral bots probe political bias on social media*. Nature Communications, 12.

4. BOLLENBACHER, John; ***PACHECO, Diogo***; HUI, Pik-Mai; YONG-YEOL, Ahn; FLAMMINI, Alessandro; MENCZER, Filippo. *On the challenges of predicting microscopic dynamics of online conversations.* Applied Network Science, 6(1), 1-21.

5. Teixeira, A. S., **Pacheco, D.**, Oliveira, M., Barbosa, H., Gonçalves, B., & Menezes, R. (2021). *Complex Networks XII*. Springer International Publishing.

6. ***PACHECO, Diogo***; HUI, Pik-Mai; TORRES-LUGO, Christopher; BAO, Tran Truong; FLAMMINI, Alessandro; MENCZER, Filippo. *Uncovering coordinated networks on social media: Methods and case studies*. In Proceedings of the International AAAI Conference on Web and Social Media (Vol. 15, pp. 455-466), 2021.

2020   7. ***PACHECO, Diogo***; FLAMMINI, Alessandro; MENCZER, Filippo. *Unveiling Coordinated Groups Behind White Helmets Disinformation.* In Companion Proceedings of the Web Conference 2020 (WWW '20). Association for Computing Machinery, New York, NY, USA, 611–616. DOI:https://doi.org/10.1145/3366424.3385775.

2019   8. ***PACHECO, Diogo***; FLAMMINI, Alessandro; MENCZER, Filippo. *What is going on Brazil? A Political Tale from Tweets*. In: The 8th International Conference on Complex Networks and their Applications. Lisbon, Portugal, 2019.

9. BLYTHE, J; BOLLENBACHER, J; HUANG, D; HUI, P; KROHN, R; ***PACHECO, D***; MURIC, G; SAPIENZA, A; TREGUBOV, A; YONG-YEOL, A; FLAMMINI, A; LERMAN, K; MENCZER, F; WENINGER, T; FERRARA, E. *Massive Multi-Agent Data-Driven Simulations of the GitHub Ecosystem*. In: Practical Applications of Agents and Multi-Agent Systems, 17th International Conference on, Ávila, Spain, June, 2019.

10. BLYTHE, J; FERRARA, E; HUANG, D; LERMAN, K; MURIC, G; SAPIENZA, A; TREGUBOV, A; ***PACHECO, D***; BOLLENBACHER, J; FLAMMINI, A; HUI, P; MENCZER, F. *The DARPA SocialSim Challenge: Massive Multi-AgentSimulations of the Github Ecosystem*. In: Proceedings of the 18th International Conference on Autonomous Agents and MultiAgent Systems, 2019, page 1835.

2018   11. BARBOSA, Hugo; OLIVEIRA, Marcos; ***PACHECO, Diogo.***; MENEZES, Ronaldo; GHOSHAL, Gourab. *The Influence of the Circadian and Ultradian Rhythms to Human Mobility: Empirical Evidences from Location-Based Check-Ins*. In: First Northeast Regional Conference on Complex Systems, Binghamton, NY, USA, April 12-13, 2018.

2017   12. ***PACHECO, Diogo***; SAHA, Priya; LIMA-NETO, F. B.; MENEZES, R.; *Sensing Language Relationships from Social Media*. In: IEEE SmartWorld, Ubiquitous Intelligence and Computing, Advanced and Trusted Computed, Scalable Computing and Communications, Cloud and Big Data Computing, Internet of People and Smart City, August 4-8, 2017.

13. ***PACHECO, Diogo***; PINHEIRO, Diego; CADEIRAS, Martin; MENEZES, Ronaldo. *Characterizing Organ Donation Awareness from Social Media*. In: Data Engineering Workshops, 33rd IEEE International Conference on, San Diego, California, USA, April 19-22, 2017.

14. ***PACHECO, Diogo***; OLIVEIRA, Marcos; MENEZES, Ronaldo. *Using Social Media to Assess Neighborhood Social Disorganization: A Case Study in the United Kingdom*. In: the 30th Florida Artificial Intelligence Research Society Conference, Marco Island, Florida, USA, May 22-24, 2017.

15. SAHA, Priya; ***PACHECO, Diogo***; MENEZES, Ronaldo. *Language as a Measure of Welfare*. In: the 30th Florida Artificial Intelligence Research Society Conference, Marco Island, Florida, USA, May 22-24, 2017.

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2016   16.   ***PACHECO, Diogo***; PINHEIRO, Diego; LIMA NETO, F. B.; RIBEIRO, Eraldo; MENEZES, R.; *Characterization of Football Supporters from Twitter Conversations*. In: Web Intelligence, IEEE/WIC/ACM International Conference on, October 13-16, 2016.

2015   17.   ***PACHECO, Diogo***; LIMA NETO, F. B.; MOYANO, L. G.; MENEZES, R.; *Football Conversations: What Twitter Reveals about the 2014 World Cup*. In: IV Brazilian Workshop on Social Network Analysis and Mining, Recife - Brazil, July 21-23, 2015.

2014   18.   ***PACHECO, Diogo***; ROSE, D; LIMA NETO, F. B.; MENEZES, R.; *Using Interactions in the Quantification of Media Bias*. In: ASE BIGDATA / SOCIALCOM / CYBERSECURITY Conference, Stanford University, May 27-31, 2014.

2008   19.   ***PACHECO, Diogo***; OLIVEIRA, F. R. S.; LIMA NETO, F. B.; *Including Multi-Objective Abilities in the Hybrid Intelligent Suite for Decision Support*. In: IEEE World Congress In Computational Intelligence & International Joint Conference On Neural Networks, 2008, Hong Kong.

        20.   ***PACHECO, Diogo***; LIMA NETO, F. B.; *A Fair Comparison of Representations, Operators and Algorithms for the Sugarcane Harvest Problem*. In: Systems, Man, and Cybernetics, IEEE International Conference on, 2008, Singapore.

        21.   ***PACHECO, Diogo***; LUCAS, T. D. P.; LIMA NETO, F. B.; *How Preferences Affect Productivity in the Sugarcane Harvest Problem a Comparative Study of a Two-Steps MOEA*. In: Hybrid Intelligent Systems, 8th International Conference on, 2008, Barcelona.

2007   22.   ***PACHECO, Diogo***; LUCAS, T. D. P.; LIMA NETO, F. B.; *How to Obtain Fair Managerial Decisions in Sugar Cane Harvest Using NSGA-II*. In: Hybrid Intelligent Systems, International Conference on, 2007, Kaiserslautern, Germany.

        23.   OLIVEIRA, F. R. S.; ***PACHECO, Diogo***; LIMA NETO, F. B.; *Hybrid Intelligent Suite For Decision Support in Sugarcane*. In: 6th Congresso Brasileiro de Agro-Informática, 2007, São Pedro, SP, Brasil.

        24.   LINS, A. J. C. C.; CALDAS, B. J. B.; BASTOS FILHO, C. J. A.; CARVALHO, D. F.; ***PACHECO, Diogo***; LIMA NETO, F. B.; *A Novel Approach for Wavelength Assignment in Optical Links Based On Modified Genetic Algorithms*. In: I Simpósio Brasileiro de Inteligência Computacional, 2007, Florianópolis, SC, Brasil.

        25.   LIMA NETO, F. B.; OLIVEIRA, F. R. S.; ***PACHECO, Diogo***. *Hybrid Intelligent Suite for Decision Support*. In: Intelligent Systems Design and Applications, Seventh International Conference on, 2007, Rio de Janeiro, Brazil.

2006   26.   OLIVEIRA, F. R. S.; ***PACHECO, Diogo***; LEONEL, A.; LIMA NETO, F. B.; *Intelligent Support Decision in Sugar Cane Harvest*. In: IV World Congress On Computers In Agriculture, 2006, Orlando, USA.

2005   27.   **PACHECO, Diogo**; REGUEIRA, F. S.; LIMA NETO, F. B.; *Utilização de Redes Neurais Artificiais em Colheitas de Cana-de-açúcar para Predição de TCC, TCH e Fibra*. ALCOOLbrás, São Paulo, p. 60 - 63, 01 mar. 2005. (In portuguese)

SERVICE

2022   PLOS ONE revisor.

        Chair of the 14th International Conference on Complex Networks (CompleNet).

        Technical Program Committee of the ACM International Conference on Information Technology for Social Good (ACM GoodIT 2022).

        Editor of Elsevier Special Issue on Future Generation ICT solutions for digital social innovation and sustainable development.

        International Journal of Human-Computer Interaction reviewer.

2021   Chair of the 13th International Conference on Complex Networks (CompleNet).

        Applied Network Science revisor.

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XV Brazilian Congress on Computational Intelligence (CBIC 2021) revisor.
Computational and Mathematical Organization Theory revisor.
EPJ Data Science revisor.
International Joint Conference on Artificial Intelligence (IJCAI 2021) revisor.
IEEE Internet Computing revisor.
Online Social Networks and Media revisor.
Physica A: Statistical Mechanics and its Applications revisor.
PLOS ONE revisor.

2020   Program committee of the International Conference on Computational Aspects of Networks Science (CAoNS).
IEEE Internet Computing revisor.
EPJ Data Science revisor.
PeerJ Computer Science revisor.
PLOS ONE revisor.
IC2S2 Session Chair.
Journal of Computational Social Science (JCSO) revisor.
International Joint Conference on Artificial Intelligence (IJCAI 2020) revisor.

2019   Nature Scientific Reports revisor.
Program committee of the 11th ACM Conference on Web Science (WebSci'19).
Program committee of the 4th Structure and Mobility of Crime Symposium (NetCrime).
Program committee of the 11th CompleNet.

2016   Applied Network Science Journal revisor.

2015   Scientific World Journal revisor.
Subreviewer of Netsci-X.
Subreviewer of Structure and Mobility of Crime Symposium (NetCrime).

2014   Subreviewer of the 10th International Conference on Signal-Image Technology & Internet-Based Systems.

2008   Technical committee of the 7th Mexican International Conference on Artificial Intelligence.

MEDIA COVERAGE
Interview to Folha de São Paulo (the biggest newspaper in Latin America). ***We are the problem and the solution for fake news, says researcher*** (English, Portuguese).
Indiana University press release. ***Political bias on social media emerges from users, not platform, IU study says*** (English).
Interview to Coda Story. ***Hunting down bots and 'bad guys' on social media*** (English).
Quoted by ABRAJI (Brazilian Association of Investigative Journalism). ***Veja como monitorar em tempo real ataques coordenados no twitter*** (Portuguese1,Portuguese2).

RESEARCH
Indiana University, USA, **Observatory on Social Media** (OSoMe) external collaborator.
University of Exeter, UK
- **Institute of Data Science and Artificial Intelligence** (IDSAI) affiliated academic.
- Member of research groups: **BioComplex Lab** and **Social & Environmental Data Analysis (SEDA) Lab**.

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University of Pernambuco, Brazil, **Computational Intelligence Research Group** invited researcher.

<u>ACTIVITIES</u>
Secretary of the Exeter Wheelers Cycling Club.
Coach of Sigma Delta Tau Little 500 female cycling team for the 2019/2020 season.