Johnnatan Messias P. Afonso

Max Planck Institute for Software Systems (MPI-SWS), Campus E1 5, 66123, Saarbrücken, Germany
t: +49-681-93038640 || **e:** johnme@mpi-sws.org || **w:** http://johnnatan.me

Google Scholar, GitHub, LinkedIn, Twitter

RESEARCH INTERESTS

Blockchains, Data Analysis, Social Computing, Machine Learning.

EDUCATION

PhD., Computer Science Saarbrücken, DE

Max Planck Institute for Software Systems - MPI-SWS August, 2018 - present
Universität des Saarlandes - UdS
Networked Systems Research group

- My research (supervised by Dr. Krishna P. Gummadi) focuses on transaction commit times on proof-of-work blockchains.

M.Sc., Computer Science Belo Horizonte, BR

Universidade Federal de Minas Gerais - UFMG March, 2015 - June, 2017
Laboratório de Computação Social - LoCuS

- Two-year program. My research was supervised by Dr. Fabrício Benevenuto.
- Thesis: Characterizing Interconnections and Linguistic Patterns in Twitter.

B.Sc., Computer Science – Exchange Program Budapest, HU

Eötvös Loránd University - ELTE July, 2013 - September, 2014

- Honors: Granted with a scholarship from the Brazilian Scientific Exchange Program (Science without Borders - CAPES) for Academic Excellence to study in a European University for fourteen months.

B.Sc., Computer Science Ouro Preto, BR

Universidade Federal de Ouro Preto - UFOP March, 2009 - December, 2014

- Four-year program, Total Grade: 8/10. My research was supervised by Dr. Ricardo A. R. Oliveira.
- Thesis: Framework Para Sistemas de Navegação de Veículos Aéreos Não Tripulados.

EXPERIENCE

Research Assistant Saarbrücken, DE

Max Planck Institute for Software Systems - MPI-SWS August, 2018 - present
Networked Systems Research group

- I work on fairness concerns on proof-of-work blockchains. More specifically, on transaction commit times on blockchains.

Data Scientist and Full Stack Software Enginee Belo Horizonte, BR

Kunumi Serviços em Tecnologia da Informação June, 2017 - July, 2018

- I worked on machine learning projects to be applied to the risk and loan default prediction and on health insurance characterization and forecasting.

Research Intern Saarbrücken, DE

Max Planck Institute for Software Systems - MPI-SWS February, 2017 - May, 2017
Networked Systems Research group

- I was supervised by Dr. Juhi Kulshrestha and Dr. Krishna P. Gummadi. We worked on the investigating political bias in social media and web search project.
- Our work has been published on [CSCW'17] and [Inf Retrieval J'19].

Research Intern Saarbrücken, DE

Max Planck Institute for Software Systems - MPI-SWS February, 2016 - May, 2016
Networked Systems Research group

- I was supervised by Dr. Mainack Mondal and Dr. Krishna P. Gummadi. We worked on the managing online data privacy and security via exposure project.
- Our work has been published on [SOUPS'16], [IEEE Internet Computing'17], and [Int J Adv Eng Sci Appl Math'17].

Research Assistant Belo Horizonte, BR

Universidade Federal de Minas Gerais - UFMG March, 2015 - June, 2017
Laboratório de Computação Social - LoCuS

- I worked on research theory of social computing and data analysis. My research was supervised by Dr. Fabrício Benevenuto.
- During this period, our work was published on [HT'17], [WI'17], [ASONAM'16], [WebMedia'15], [SBBD'15], and [BraSNAM'15].

Developed Systems and Applications

1. **Eleições sem Fake:** We developed many systems to help with the Fake news problem. Those systems were the key to our research on misinformation dissemination within public Whatsapp groups [WWW'19], [ICWSM'19], [WebMedia'18].

2. **Who Makes Trends?:** Demographic of Trend Promoters is the distribution (or combination) of demographic groups (such as middle-aged white men, young asian women, adolescent black men) in the crowd promoting (or posting about) a topic before the topic becomes Trending on Twitter. Here, we are only considering US based Twitter users whose tweets on the trends appear in the 1% random sample distributed by Twitter. This system was key to our work published on [ICWSM'17].

3. **Search Political Leaning of Twitter Users:** You can login with your Twitter credentials, to see the political leaning (between democratic and republican) inferred for you. You can also search for other Twitter users and check their political leanings. This system was key to our work published on [CSCW'17] and [Inf Retrieval J'19].

4. **Secondary Digital Footprint:** Twitter is social, people converse with you by mentioning your username in their tweets (e.g., while replying to your tweet or giving a shout-out to you). These conversations are your secondary digital footprint , even if you delete your account or delete selected tweets, this secondary footprint is not deleted automatically and leaks information about you. Check what your secondary digital footprint reveals about you and your content. This system was key to our research published on [SOUPS'16], [IEEE Internet Computing'17], and [Int J Adv Eng Sci Appl Math'17].

PRESS

Some of my scientific efforts have been covered by news media and specialized blogs, including The New York Times, The Huffington Post, MIT Tech Review, BBC Brasil, Nexo, and Folha de São Paulo.

TALKS

- 2019: (Mis)Information Dissemination in WhatsApp: Gathering, Analyzing and Countermeasures. 5th International Conference on Computational Social Science (IC2S2'19). Amsterdam, NL.
- 2016: From Migration Corridors to Clusters: The Value of Google+ Data for Migration Studies. IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM'16). San Francisco, US.
- 2016: Towards Sentiment Analysis for Mobile Devices. IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM'16). San Francisco, US.
- 2015: Bazinga! Caracterizando e Detectando Sarcasmo e Ironia no Twitter. Brazilian Workshop on Social Network Analysis and Mining (BraSNAM'15). Recife, BR.
- 2015: Brazil Around the World: Characterizing and Detecting Brazilian Emigrants Using Google+. Brazilian Symposium on Multimedia and the Web (WebMedia'15). Manaus, BR.
- 2013: Bots Sociais: Como robôs podem se tornar pessoas influentes no Twitter? XXXII Concurso de Trabalhos de Iniciação Científica (CTIC'13). Maceió, BR.
- 2012: Sigam-me os bons! Transformando robôs em pessoas influentes no Twitter. Brazilian Workshop on Social Network Analysis and Mining (BraSNAM'12). Curitiba, BR.
- 2011: UGUIDE: Rede Social Móvel Aplicada a Educação. XIX Seminário de Iniciação Científica da UFOP. Ouro Preto, BR.
- 2011: Computação Móvel: Tendências e Android. 6ª Semana da Informática - IFSULDEMINAS. Muzambinho, BR.
- 2010: BlueGuide - Uma Plataforma de Suporte ao Turista em Ouro Preto. I Seminário de Pesquisa do PPGCC & UFOP e I Fórum de Alunos e Ex-Alunos do DECOM. Ouro Preto, BR.

PUBLICATIONS

Journal

1. Kulshrestha, J., Eslami, M., **Messias, J.**, Zafar, M.B., Ghosh, S., Gummadi, K.P. and Karahalios, K., 2019. Search bias quantification: investigating political bias in social media and web search. Information Retrieval Journal, 22(1-2), pp.188-227.

2. Mondal, M., **Messias, J.**, Ghosh, S., Gummadi, K.P. and Kate, A., 2017. Managing longitudinal exposure of socially shared data on the Twitter social media. International Journal of Advances in Engineering Sciences and Applied Mathematics, 9(4), pp.238-257.

3. **Messias, J.**, Diniz, J.P., Soares, E., Ferreira, M., Araújo, M., Bastos, L., Miranda, M. and Benevenuto, F., 2017. An evaluation of sentiment analysis for mobile devices. Social Network Analysis and Mining, 7(1), p.20.

4. Mondal, M., **Messias, J.**, Ghosh, S., Gummadi, K. and Kate, A., 2017. Longitudinal Privacy Management in Social Media: The Need for Better Controls. IEEE Internet Computing.

5. **Messias, J.**, Schmidt, L., Oliveira, R. and Benevenuto, F., 2013. You followed my bot! Transforming robots into influential users in Twitter.

Conference

1. Resende, G., Melo, P., Sousa, H., **Messias, J.**, Vasconcelos, M., Almeida, J. and Benevenuto, F., 2019, May. (Mis) Information Dissemination in WhatsApp: Gathering, Analyzing and Countermeasures. In The World Wide Web Conference (pp. 818-828). ACM.

2. Melo, P., **Messias, J.**, Resende, G., Garimella, K., Almeida, J. and Benevenuto, F., 2019, July. WhatsApp Monitor: A Fact-Checking System for WhatsApp. In Proceedings of the International AAAI Conference on Web and Social Media (Vol. 13, No. 01, pp. 676-677).

3. Ribeiro, F.N., Saha, K., Babaei, M., Henrique, L., **Messias, J.**, Benevenuto, F., Goga, O., Gummadi, K.P. and Redmiles, E.M., 2019, January. On microtargeting socially divisive ads: A case study of russia-linked ad campaigns on facebook. In Proceedings of the Conference on Fairness, Accountability, and Transparency (pp. 140-149). ACM.

4. Resende, G., **Messias, J.**, Silva, M., Almeida, J., Vasconcelos, M. and Benevenuto, F., 2018, October. A System for Monitoring Public Political Groups in WhatsApp. In Proceedings of the 24th Brazilian Symposium on Multimedia and the Web (pp. 387-390). ACM.

5. **Messias, J.**, Vikatos, P. and Benevenuto, F., 2017, August. White, man, and highly followed: Gender and race inequalities in Twitter. In Proceedings of the International Conference on Web Intelligence (pp. 266-274). ACM.

6. Reis, J., Kwak, H., An, J., **Messias, J.** and Benevenuto, F., 2017, July. Demographics of news sharing in the us twittersphere. In Proceedings of the 28th ACM Conference on Hypertext and Social Media (pp. 195-204). ACM.

7. Vikatos, P., **Messias, J.**, Miranda, M. and Benevenuto, F., 2017, July. Linguistic diversities of demographic groups in Twitter. In Proceedings of the 28th ACM Conference on Hypertext and Social Media (pp. 275-284). ACM.

8. Chakraborty, A., **Messias, J.**, Benevenuto, F., Ghosh, S., Ganguly, N. and Gummadi, K.P., 2017, May. Who makes trends? understanding demographic biases in crowdsourced recommendations. In Eleventh International AAAI Conference on Web and Social Media.

9. Kulshrestha, J., Eslami, M., **Messias, J.**, Zafar, M.B., Ghosh, S., Gummadi, K.P. and Karahalios, K., 2017, February. Quantifying search bias: Investigating sources of bias for political searches in social media. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (pp. 417-432). ACM.

10. **Messias, J.**, Benevenuto, F., Weber, I. and Zagheni, E., 2016, August. From migration corridors to clusters: The value of Google+ data for migration studies. In Proceedings of the 2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (pp. 421-428). IEEE Press.

11. **Messias, J.**, Diniz, J.P., Soares, E., Ferreira, M., Araujo, M., Bastos, L., Miranda, M. and Benevenuto, F., 2016, August. Towards sentiment analysis for mobile devices. In 2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM) (pp. 1390-1391). IEEE.

12. Mondal, M., **Messias, J.**, Ghosh, S., Gummadi, K.P. and Kate, A., 2016. Forgetting in social media: Understanding and controlling longitudinal exposure of socially shared data. In Twelfth Symposium on Usable Privacy and Security (SOUPS 2016) (pp. 287-299).

13. Silva, L. A. A., **Messias, J.**, Moro, M. M., Melo, P. O. S. V., Benevenuto F., 2015, June. Algoritmos de Aprendizado de Máquina para Predição de Resultados de Lutas de MMA. SBBD (Short Papers) (pp. 21-26).

14. **Messias, J.**, Magno, G., Benevenuto, F., Veloso, A. and Almeida, V., 2015, October. Brazil Around the World: Characterizing and Detecting Brazilian Emigrants Using Google+. In Proceedings of the 21st Brazilian Symposium on Multimedia and the Web (pp. 85-91). ACM.

15. Gonçalves, P., Dalip, D.H., Reis, J.C., **Messias, J.**, Ribeiro, F. and Melo, P., 2015. Bazinga! caracterizando e detectando sarcasmo e ironia no twitter. In In Proceedings of the Proceedings of the Brazilian Workshop on Social Network Analysis and Mining (BraSNAM) (p. 3).

16. **Messias, J.**, Benevenuto, F. and Oliveira, R., 2018. Bots Sociais: Como robôs podem se tornar pessoas influentes no Twitter?. Revista Eletrônica de Iniciação Científica em Computação, 16(1).

17. **Messias, J.**, Schmidt, L., Oliveira, R. and Benevenuto, F., 2012. Sigam-me os bons! Transformando robôs em pessoas influentes no Twitter. BraSNAM, Curitiba, PR, Brazil.

Other

1. **Messias, J.**, 2017. Characterizing Interconnections and Linguistic Patterns in Twitter. M.Sc. Thesis, Universidade Federal de Minas Gerais - UFMG.
2. **Messias, J.**, 2014. Framework Para Sistemas de Navegação de Veículos Aéreos Não Tripulados. B.Sc. Thesis, Universidade Federal de Ouro Preto - UFOP.

TEACHING

Courses

- 2016, 2017: Teaching Assistant for Analysis and Algorithm Design at UFMG.
- 2013: Design and Analysis of Algorithms for High School students at Escola Estadual Dom Silvério.
- 2013: Operating System for High School students at Escola Estadual Dom Silvério.
- 2013: Introduction to Hardware for High School students at Escola Estadual Dom Silvério.

SKILLS

Data Science

Social media data (Twitter, WhatsApp, Google+, Facebook) crawling, cleaning and analysis; feature engineering; descriptive and inferential statistics (incl. correlation, regression, t-test, chi-square); applied machine learning (supervised, unsupervised); Python (incl. Pandas, NumPy, SciPy, Scikit-Learn, XGBoost), iPython, SQL.

Soft Skills

Scientific and non-scientific presentations.

Programming Languages

Python, C, C++, Java.

Languages

Portuguese (native), English (fluent), German (basic).