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### CONTACT INFORMATION

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### EDUCATION

- sep 2014 – may 2020 **PhD in Computer Science**, *New York University, New York City - United States.*  
PhD Advisor: Juliana Freire  
PhD Dissertation Title: Explaining and Identifying Data to Support Data-Driven Analyses
- mar 2012 – feb 2014 **MSc in Computer Science**, *Federal University of Minas Gerais, Belo Horizonte – Brazil.*  
MSc Advisor: Nivio Ziviani  
MSc Dissertation Title: Using Utility Relations among Items to Improve Recommendations.
- mar 2006 – dec 2010 **BSc in Computer Science**, *Federal University of Bahia, Salvador – Brazil.*  
BSc Monography Advisor: Doctor Alexandre Passos and Professor Luciano Barreto  
BSc Monography Title: Identifying and Characterizing Viewpoints in Documents – Theoretical and Practical Aspects.

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### PUBLICATIONS

- 2021 **Auctus: A Dataset Search Engine for Data Discovery and Augmentation.**  
Sonia Castelo, Rémi Rampin, Aécio Santos, Aline Bessa, Fernando Chirigati and Juliana Freire.  
In: International Conference on Very Large Data Bases (VLDB), (*to appear*).
- 2021 **Correlation Sketches for Approximate Join-Correlation Queries.**  
Aécio Santos, Aline Bessa, Fernando Chirigati, Christopher Musco, Juliana Freire.  
In: ACM International Conference on Management of Data (SIGMOD), 1531 - 1544, 2021.
- 2021 **An Ecosystem of Tools for Modeling Political Violence.**  
Aline Bessa, Sonia Castelo, Rémi Rampin, Aécio Santos, Mike Shoemate, Vito D'Orazio, Juliana Freire.  
In: ACM International Conference on Management of Data (SIGMOD), 2384 - 2388, 2021.
- 2020 **Effective Discovery of Meaningful Outlier Relationships.**  
Aline Bessa, Juliana Freire, Divesh Srivastava, and Tamraparni Dasu.  
ACM Transactions on Data Science (TDS), 1(2), pp. 12 - 33.
- 2019 **Understanding Spatio-Temporal Urban Processes.**  
Lais M. A. Rocha, Aline Bessa, Fernando Chirigati, Eugene OFriel, Mirella Moro, and Juliana Freire.  
In: IEEE International Conference on Big Data, pp. 563 - 572, 2019.

- 2017 **Exploiting Item Co-Utility to Improve Collaborative Filtering Recommendations**  
Aline Bessa, Rodrygo L. T. Santos, Adriano Veloso, and Nivio Ziviani.  
Journal of the Association for Information Science and Technology (JASIST), 68(10), pp. 2380 - 2393, 2017.
- 2016 **Exploring What not to Clean in Urban Data: A Study Using New York City Taxi Trips.**  
Juliana Freire, Aline Bessa, Fernando Chirigati, Huy Vo, and Kai Zhao.  
In: IEEE Data Engineering Bulletin, 39(2), pp. 63 - 77, 2016.
- 2015 **RioBusData: Outlier Detection in Bus Routes of Rio de Janeiro.**  
Aline Bessa, Fernando de Mesentier Silva, Rodrigo Frassetto Nogueira, Enrico Bertini, and Juliana Freire.  
In: Proceedings of the 1st Symposium on Visualization in Data Science (VDS at IEEE VIS), Chicago, Illinois, US, 2015.
- 2014 **Bridging Vocabularies to Link Tweets and News.**  
Tuan-Anh Hoang-Vu, Aline Bessa, Luciano Barbosa, and Juliana Freire.  
In: Proceedings of the 17th International Workshop on the Web and Databases (WebDB 2014), Snowbird, Utah, US, 2014.
- 2013 **Using Mutual Influence to Improve Recommendations**  
Aline Bessa, Adriano Veloso, and Nivio Ziviani.  
In: Proceedings of the 20th String Processing and Information Retrieval International Symposium, pp. 17 – 28, 2013.
- 2012 **Graph Cospetrality Using Neighborhood Matrices**  
Aline Bessa, Ivan C. Rocha-Neto, Suani T.R. Pinho, Roberto F.S. Andrade, and Thierry P.C. Lobão.  
The Electronic Journal of Combinatorics, v. 19, P23, 2012.
- 2012 **Alleviating the Sparsity Problem in Recommender Systems by Exploring Underlying User Communities**  
Aline Bessa, Adriano Veloso, Alberto H.F. Laender, and Nivio Ziviani.  
In: Proceedings of the 6th Alberto Mendelzon International Workshop on Foundations of Data Management, pp. 35 – 47, 2012.
- 2011 **Netnography and Coolhunting: Identifying Behaviors and Trends in Social Media (in portuguese)**  
Aline Bessa, Danila Dourado, and Marcel Ayres.  
In: Comunicação e Marketing Digitais – Conceitos, Práticas, Métricas e Inovacões, Marcello Chamusca, Márcia Carvalhal, VNI, pp. 166 – 190, 2011.
- 2011 **Identifying and Characterizing Viewpoints in Documents about the 2010 Brazilian Presidential Elections.**  
Aline Bessa and Alexandre Passos.  
In: 6th International Workshop of Women in Machine Learning, 2011 (poster).
- 2009 **Classifying Graphs by Spectra of Neighborhood Matrix and Higher Order Adjacency Matrices.**  
Aline Bessa, Thierry P.C. Lobão, Suani T.R. Pinho, and Roberto F.S. Andrade.  
In: Latin America Workshop on Nonlinear Phenomena, 2009 (extended abstract).

- 2008 **Characterization of Complex Networks and Graphs via Neighborhood and Higher Order Adjacency Matrices (in portuguese).**  
Aline Bessa, Thierry P.C. Lobão, and Suani T.R. Pinho.  
In: XXVI Encontro de Físicos do Norte e Nordeste, 2008 (poster).
- 2006 **The Development of a Multi-platform 3D Game Engine (in portuguese).**  
Aline Bessa, Caio T. Sousa, Carlos E. Bezerra, Ivan Monteiro, Humberto Bandeira, and Rodrigo Souza.  
In: V Brazilian Symposium on Computer Games and Digital Entertainment, 2006.

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## EXPERIENCE

### WORKING EXPERIENCE

- jan 2021 - **New York University**  
Postdoctoral Researcher.  
Mentor: Christopher Musco.
- jun 2020 - dec 2020 **New York University**  
Postdoctoral Researcher.  
Mentor: Juliana Freire.
- jun 2018 - aug 2018 **AT&T Labs – Research**  
Summer research internship on Data Quality.  
Supervisors: Dmitri Kalashnikov and Divesh Srivastava.
- jun 2016 - aug 2016 **AT&T Labs – Research**  
Summer research internship on Data Quality.  
Supervisors: Tamraparni Dasu and Divesh Srivastava.
- oct 2013 - jun 2014 **Zunitt Technologies**  
Development of recommendation algorithms for content providers, social media, and ecommerce.  
Manager: Juliano Viana.
- jan 2013 - mar 2013 **New York University**  
Research internship on Information Retrieval and Urban Data Analysis.  
Supervisor: Juliana Freire.
- mai 2011 - aug 2011 **GNOME Outreach Program for Women**  
Internship as a programmer developing new functionalities and documentation for the Accerciser GNOME tool.  
Supervisor: Joanmarie Diggs.
- mar 2011 - jun 2011 **TopTal**  
Implementation of parts of a platform for matching programmers and clients.  
Manager: Taso Du Val.
- dec 2010 - apr 2011 **Kliceo**  
Development of parts of a system for selling, buying, and crossing second-hand books.  
Manager: Leandro Nunes.

jun 2010 – jan 2011 **PaperCliQ**  
Development of text mining applications for news and tweets.  
Manager: Tarcizio Silva.

aug 2009 – aug 2010 **Safernet Brasil**  
Implementation of a questionnaire system.  
Manager: Leandro Nunes.

## RESEARCH EXPERIENCE

jan 2021 – **Augmenting Datasets for Model Improvement with Cost Constraints**  
A research in Data Integration and Algorithms in which we investigate how to improve models through input data augmentation when there are significant costs associated to dataset acquisition.  
Mentor: Professor Christopher Musco – CSE/New York University.

oct 2019 – **Identifying Datasets to Improve the Quality of Learning Models through Data Augmentation**  
A research that blends Data Integration, Machine Learning, and Information Retrieval techniques in order to identify datasets that are likely to increase the quality of Machine Learning models through Data Augmentation.  
Advisors: Professor Juliana Freire – CSE/New York University - and Doctor Divesh Srivastava - AT&T Labs-Research.

jun 2016 – dec 2019 **Detecting Correlations among Outliers in Multiple Real-time Streams**  
A research in Data Quality in which we implement scalable techniques to identify correlations among outliers in numerous different streams at the same time.  
Advisors: Doctors Divesh Srivastava and Tamraparni Dasu - AT&T Labs-Research - and Professor Juliana Freire – CSE/New York University.

sep 2014 – jun 2016 **Estimating the Size of Topics on the Web**  
A research in Web Analysis in which we investigate different estimators for the size of distinct topics on the web.  
Advisor: Professor Juliana Freire – CSE/New York University.

sep 2014 – jul 2015 **Identifying and Visualizing Outlier Buses in Rio de Janeiro**  
A research in Machine Learning and Information Visualization in which we investigate how to automatically identify and examine outlier buses in Rio de Janeiro.  
Advisors: Professors Juliana Freire and Enrico Bertini – CSE/New York University.

mar 2012 – feb 2014 **Using Utility Relations among Items to Improve Recommendations**  
A research in Recommender Systems in which we investigate how utility relations among items can help improving the overall quality of recommendation lists.  
Advisors: Professors Nivio Ziviani and Adriano Veloso – DCC/Federal University of Minas Gerais.

jun 2011 – feb 2012 **Addressing the Sparsity Problem by Exploring Underlying User Communities**  
A research in which we developed a strategy for reducing the sparsity problem in Recommender Systems based on Collaborative Filtering.  
Advisor: Professor Nivio Ziviani – DCC/Federal University of Minas Gerais.

- mar 2010 – dec 2010 **Sentiment Analysis and Opinion Mining**  
 A thorough study about theoretical and practical aspects of sentiment analysis, focusing in viewpoint mining.  
 Advisors: Doctor Alexandre Passos and Professor Luciano Barreto – DCC/Federal University of Bahia.
- jun 2007 – jul 2009 **Algebraic and Metric Aspects of Neighborhood Matrices**  
 A research in which new matrices for representing graphs, with significantly lower cospectrality rates, were proposed and studied.  
 Advisors: Professors Thierry P.C. Lobão and T.R. Pinho. IF/Federal University of Bahia.
- jun 2006 – jun 2007 **Architecture of Game Engines**  
 A thorough study about how to implement game engines, focusing on the Physics simulation aspects.  
 Advisors: Humberto Bandeira – DCC/Federal University of Bahia.

### TEACHING EXPERIENCE

- mar 2013 – jul 2013 **Teaching Assistant**  
 Course: Information Retrieval.  
 Supervisors: Professors Berthier Ribeiro-Neto and Nivio Ziviani – DCC/Federal University of Minas Gerais.
- mar 2008 – dec 2008 **Undergraduate Teaching Assistant**  
 Course: Theory of Computation.  
 Supervisor: Professor Aline Andrade – DCC/Federal University of Bahia.
- mar 2007 – mai 2007 **Undergraduate Teaching Assistant**  
 Course: Advanced C and Good Programming Practices.  
 Co-supervisor: Caio T. Sousa – DCC/Federal University of Bahia.

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### HONORS AND AWARDS

- Award Second place at the hackathon to fight Human Trafficking organized by Manhattan DA and Cornell Tech (<https://goo.gl/suCTHn>)
- Award Third place at the NYC MediaLab Summit 2016 (<https://goo.gl/H52no1>)
- Honors **Highest GPA (9.4/10.0), out of more than 400 Computer Science students**, by the end of undergraduate studies (2010).
- Honors **Highest score** in the admission exams to Federal University of Bahia, **out of more than 50,000 candidates** (2006).
- Award Winner of the French Writing Contest Concours Bicentenaire de la Naissance de George Sand, provided by the French Embassy in Brazil (2004).

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### LANGUAGES

Portuguese	Native language	French	Fluent
English	Fluent	Spanish	Fair

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## TECHNICAL SKILLS

- Programming Highly proficient in **Python**; proficient in **Java**, **C**, and **C++**; familiar with Ruby, Assembly (x86), Shell Script, JavaScript, and Common Lisp.
- Scientific Scikit-learn, Pandas, Jupyter, Scipy, and Octave.
- OS Linux and Mac OS.
- Others **L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>**, Emacs, XML, and SQL.