Markos Viggiato

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Highlights of Qualifications

- Proven record of collaboration with multicultural teams (papers [P2, P3])
- Previous independent research projects using quantitative models with real-world data
- Technical expertise: NLP, statistical modelling, prediction and explanatory models, explainable AI, unstructured data analysis

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▬▬ Education

Jan-2019– Present	**PhD in Electrical and Computer Engineering**, *University of Alberta*, Edmonton, Canada.
	○ Data Science and Applied Machine Learning. GPA: 4.0 (out of 4.0)
Mar-2017– Dec-2018	**MSc in Computer Science**, *Federal University of Minas Gerais*, Belo Horizonte, Brazil.
	○ Machine Learning and Data Mining for Software Engineering. GPA: 9.0 (out of 10.0)
Mar-2011– Dec-2016	**Bachelor in Control and Automation Engineering**, *Federal University of Minas Gerais*, Belo Horizonte, Brazil. GPA: 7.6 (out of 10.0).

▬▬ Industry Experience

Oct 2020– Present	**Data Science Researcher (Intern)**, *Prodigy Education*. AI-based and data-driven game testing pipeline **(Python, R, SQL)**
Jan-2016– Apr-2016	**Automation Engineering Intern**, *Centre Suisse d'Electronique et de Microtechnique - Brazil*. Autonomous system to collect and process solar energy-related data **(C, C++, Java, MATLAB)**

▬▬ Research Experience

Jan-2019– Present	**PhD Researcher**, *University of Alberta*. Research in applied machine learning - enabling more effective approaches to leverage complex data to improve products and user experience **(Python, Java, R)**

- Built a transformer-based technique (BERT) to identify redundancy in English text data and achieved a performance of 75%.
- Modelled user behavior to build explainable win prediction models (XGBoost, Random Forest, Logistic Regression) for the Dota 2 game using the SHAP interpretability technique and achieved a performance of 86%.
- Implemented a sentiment analysis classification pipeline to analyze 12M of game reviews. Identified key problems that degrade the sentiment analysis performance, with a potential performance improvement of up to 11%.

Jan-2017– Dec-2018	**MSc Researcher**, *Federal University of Minas Gerais*. Research in machine learning and data mining for software engineering **(Python, Java, R)**

- ○ Modelled the behaviour of developers using statistical and explanatory models and leveraged frequent itemset algorithms to identify co-evolution of changes in software.
- ○ Built models to classify commits into maintenance activities using machine learning algorithms, which increased the state-of-the-art accuracy by 5%.
- ○ Collaborated on a project to build explainable prediction models for software defects using XGBoost and SHAP values and improved the prediction accuracy by 15%.

Jan-2016– Dec-2016	**Undergraduate Researcher**, *Federal University of Minas Gerais*. Research in algorithm design, computational complexity and software quality **(Java, R, HTML, CSS)**

- ○ Implemented efficient heuristics to configure software products.
- ○ Investigated software quality factors for e-commerce, health, and game domains.

Sep-2013– Dec-2015	**Undergraduate Researcher & Developer**, *Federal University of Minas Gerais*. Development of data processing pipeline for an autonomous monitoring system for power companies **(LabVIEW, MATLAB, C++)**

- ○ Developed efficient algorithms for data acquisition, data processing, and vibration analysis using the LabVIEW platform.

Selected Publications

P1 **Trouncing in Dota 2: An Investigation of Blowout Matches.** Markos Viggiato, Cor-Paul Bezemer. *The 16th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE 2020)*

P2 **What Causes Wrong Sentiment Classifications of Game Reviews?** Markos Viggiato, Dayi Lin, Abram Hindle, Cor-Paul Bezemer. *IEEE Transactions on Games*

P3 **Feature changes in source code for commit classification into maintenance activities.** Richard Mariano, Geanderson Santos, Markos Viggiato, Wladmir Brandao. *The 18th International Conference on Machine Learning and Applications (ICMLA 2019)*

Additional Information

Personal projects	○ Automated and explainable decision support system for investment portfolio management
Awards	○ Alberta Innovates Graduate Student Scholarship (Jan 2020 - present). 3-year duration scholarship ○ Alberta Graduate Excellence Scholarship (AGES) (Sep 2019) ○ Early Career Researcher Award (Sep 2019) provided by the University of Alberta
Leadership positions	○ Weekly seminar organizer in the Software and Machine Learning research laboratory during the master, 2017–2018 ○ Organizing member of the 6th Computer Science Summer School, *Federal University of Minas Gerais*, Brazil, 2017
Other Skills	○ Experience with project management, git, MySQL, bash script, Linux environment, Google Cloud Platform (GCP), Jupyter Notebook, machine learning models, scikit-learn framework, NLTK framework, Tensorflow, BERT ○ Proficient in the following languages: Python, R, C/C++, Java, MATLAB