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Markos Viggiato

Highlights of Qualifications

- Proven record of collaboration with different research groups from different countries (papers [P2, P3, P4])
- Research expertise: applied data analytics and applied machine learning, with a focus on computer game analytics and software analytics
- Technical expertise: Natural Language Processing (sentiment analysis), prediction and explanatory machine learning models, unstructured data processing, and statistical modelling

Education

Jan-2019–Present **PhD in Electrical and Computer Engineering**, *University of Alberta*, Edmonton, Canada.
- Data Science applied to computer games. GPA: 4.0 (out of 4.0)

Mar-2017–Dec-2018 **Masters in Computer Science**, *Federal University of Minas Gerais*, Belo Horizonte, Brazil.
- Machine Learning 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).

Research Experience

Jan-2019–Present **PhD Researcher**, *University of Alberta*.
Research in applied Machine Learning and data analytics using computer game data **(Python, Java, R)**
- Built explainable win prediction models (XGBoost, Random Forest, Logistic Regression) for Dota 2 using SHAP values 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%.
- Collaborated on a project to model the helpfulness of computer game reviews on the Steam platform using the Random Forest algorithm.

Jan-2017–Dec-2018 **MSc Researcher**, *Federal University of Minas Gerais*.
Research in applied machine learning and data mining for software engineering **(Python, Java, R)**
- Implemented algorithms to mine and process software repositories from GitHub.
- 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 software reuse and software quality **(Java, R, HTML, CSS)**
- 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 a remote vibration monitoring system for hydroelectric plants of energy companies **(LabVIEW, MATLAB, C++)**
- Developed efficient algorithms for data acquisition, data processing, and vibration analysis using the LabVIEW platform.

Industrial Experience

Jan-2016–Apr-2016 **Automation Engineering Intern**, *Centre Suisse d'Electronique et de Microtechnique - Brazil*.
Development of new technologies for flexible solar panels **(C, C++, MATLAB, Java)**
- Developed an autonomous system to collect and process solar energy-related data.
- Delivered a temperature and humidity complete monitoring system using the Arduino microcontroller.

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 (under review)*

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)*

P4 **How Do Code Changes Evolve in Different Platforms? A Mining-based Investigation.** Markos Viggiato, Johnatan O., Eduardo F., Pooyan J., Christian K. *The 35th International Conference on Software Maintenance and Evolution (ICSME 2019)*

Additional Information

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 Engineering research laboratory during the masters, 2017–2018
- Organizing member of the 6th Computer Science Summer School, *Federal University of Minas Gerais*, Brazil, 2017
- Team leader in an automotive engineering competition in the USA, 2013

Other Skills
- Experience with project management, JUnit, git, RESTful API, MySQL, MVC architecture, bash script, Linux environment, Google Cloud servers, JSON, Jupyter Notebook, machine learning models, scikit-learn framework