

# John Vargas

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## Education

- 2015–June 2019 (expected) **Ph.D. in Computer Science**, *University of Campinas*, SP, Brazil.  
Machine Learning Applied to Open Geographical Data
- 2013–2015 **M.Sc. in Computer Science**, *University of Campinas*, SP, Brazil.  
Supapixel-based Active Learning for Remote Sensing Image Classification
- 2006–2010 **B.Eng. in Computer Systems**, *University of San Antonio Abad del Cusco*, CUS, Peru.  
Best Student Award 2009, UNSAAC  
Implementation of the First Text-to-speech System for the Quechua Language

## Experience

- 2017–2018 **Visiting researcher in Geographic Information Data Science**, *Laboratory of Geo-information Science and Remote Sensing*, WG, **the Netherlands**.
- Proposed a methodology to automatically correct building footprint annotations in OpenStreetMap (OSM) using Markov Random Fields and deep learning methods. It improves by 50% the accuracy of the original OSM annotations.
  - Proposed a method to predict the landuse of urban footprints in OpenStreetMap using multi-view ground-based pictures. It uses Siamese Convolutional Neural Network and outperformed by 12% of accuracy other methods.
  - Implemented an application for interactive annotation of coconut trees in aerial images, that outperforms traditional strategies. It extracted image features and project them in a 2D visualization plot using t-SNE, where they are selected and annotated by a user.
- 2011–2012 **Software Developer**, *Brain Systems*, CUS, **Peru**.
- Successfully implemented efficient SQL procedures and queries for the development of a software for the control of operations of one of the main electrical energy distribution companies in Peru. Contributed to the design of the database and the generation of reports.

## Selected Projects

- 2015-2016 **Copy-move forgery detection**.  
Proposed a machine learning-based technique to detect copy-move image tampering. Copy-move forgery is one of the main methods of image forgery that consists in selecting, copying and pasting some regions from and to an image duplicating or hiding objects of regions of interest.
- 2018-2019 **Machine learning for interactive correction of building footprints in OpenStreetMap**.  
Developed a human-computer interactive approach that uses deep learning and user interaction to correct wrong building annotations in OpenStreetMap. It allows the user to only verify/correct less than 18% of the data correcting 99.5% of the wrong annotations.

## Technical Skills

- Development experience: Python, SQL, C, PHP
- Familiar with: R, Matlab, C++, C#, Java, Javascript
- Toolkits: PyTorch, NumPy, scikit-learn, scikit-image, OpenCV, QGIS

## Languages

Proficient in English, Portuguese and Spanish.