

# Guilherme Augusto POTJE

## PERSONAL DATA

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PLACE AND YEAR OF BIRTH: Presidente Prudente, SP, Brazil | 1991  
CITIZENSHIP: Brazilian  
CURRENT LOCATION: Pampulha Area, Belo Horizonte – MG, Brazil  
EMAIL: [guipotje@gmail.com](mailto:guipotje@gmail.com)  
WEBPAGE: <https://guipotje.github.io>

## EDUCATION

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| 2018 – Current | <p>Ph.D. in COMPUTER SCIENCE<br/><i>Federal University of Minas Gerais (UFMG), Belo Horizonte – MG, Brazil.</i><br/>Fields: Computer Vision and Deep Learning<br/>Research Title: “Towards Deformation-Invariant Image Descriptors”<br/>Advisor: Prof. Erickson R. NASCIMENTO (UFMG)<br/>Co-Advisor: Prof. Renato MARTINS (UBFC) <a href="#">  Link to project page</a></p> |
| 2014 – 2016    | <p>M.Sc. in COMPUTER SCIENCE<br/><i>Federal University of Minas Gerais (UFMG), Belo Horizonte – MG, Brazil.</i><br/>Field: Computer Vision<br/>Thesis: “On the Improvement of Three-Dimensional Reconstruction from Large Datasets”<br/>Advisor: Prof. Erickson R. NASCIMENTO (UFMG)<br/>Co-Advisor: Prof. Mario F. M. CAMPOS (UFMG) <a href="#">  Link to thesis</a></p>   |
| 2010 – 2013    | <p>Bachelor’s Degree in COMPUTER SCIENCE<br/><i>Unoeste – FIPP, Presidente Prudente – SP, Brazil.</i><br/>Field: Image Processing<br/>Thesis: “Building’s Roof Contour Extraction Using LiDAR and Aerial Images”<br/>Advisor: Prof. Mario A. PAZOTI (FIPP) <a href="#">  Link to thesis</a></p>   |

## WORK EXPERIENCE

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| 2017 – 2018 | <p>Research Engineer, VeRLab and Instituto Tecnológico Vale (ITV)<br/>I worked as a Computer Vision research engineer on an R&amp;D project founded by the Instituto Tecnológico Vale (ITV) called “EspeleoRobô”. The purpose of the research was to develop an autonomous robot for cavity exploration and tools for immersive visualization and interaction with 3D mapped cavities. In this project, my activities were focused on the 3D data processing by creating a mesh reconstruction pipeline as a software, and also an application to visualize the reconstructed 3D model through the Microsoft HoloLens device. <a href="#">  Link to video</a></p> |
| 2014 – 2016 | <p>Graduate Research Intern, VeRLab – Computer Vision &amp; Robotics Lab, UFMG<br/>During my Master thesis, I worked on a mining research project founded by Instituto Tecnológico Vale (ITV). The focus of the project was to create an autonomous system for aeromagnetic surveys using multiple drones. My activities were centered on coupling 3D reconstruction from images, remote sensing and geophysics. My contributions to the project were on developing a software for 3D reconstruction from images, and a tool for magnetic data processing and data fusion that generates 3D magnetic maps. <a href="#">  Link to video</a></p>                    |

## PUBLICATIONS

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- 2021 **Potje, G.**, Martins, R., Cadar, F., Nascimento, E. R. “[Extracting Deformation-Aware Local Features by Learning to Deform](#)”. Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS).
- 2021 Azpúrua, H., Rezende, A., **Potje, G.**, da Cruz Júnior, G. P., Fernandes, R., Miranda, V., ... & Freitas, G. M. “[Towards Semi-autonomous Robotic Inspection and Mapping in Confined Spaces with the EspeleoRobô](#)”. Journal of Intelligent & Robotic Systems.
- 2019 Nascimento, E. R., **Potje, G.**, Martins, R., Cadar, F., Campos, M. F., & Bajcsy, R. “[GEOBIT: A Geodesic-Based Binary Descriptor Invariant to Non-Rigid Deformations for RGB-D Images](#)”. International Conference on Computer Vision (ICCV).
- 2019 Azpúrua, H., **Potje, G. A.**, Rezeck, P. A., Freitas, G. M., Uzeda Garcia, L. G., Nascimento, E. R., ... & Campos, M. F. “[Cooperative Digital Magnetic-elevation Maps by Small Autonomous Aerial Robots](#)”. Journal of Field Robotics.
- 2017 **Potje, G.**, Resende, G., Campos, M. & Nascimento, E. R. “[Towards an Efficient 3D Model Estimation Methodology for Aerial and Ground Images](#)”. Machine Vision and Applications (MVA).
- 2016 Macharet, D. G., Perez-Imaz, H. I., Rezeck, P. A., **Potje, G. A.**, Benyosef, L. C., Wiermann, A., ... & Campos, M. F. “[Autonomous Aeromagnetic Surveys using a Fluxgate Magnetometer](#)”. Sensors.

## AWARDS

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- 2021 Google Latin America Research Awards (Google LARA). “Learning to Match Images of Deformable Objects”.

## LANGUAGES

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BRAZILIAN PORTUGUESE: Native  
ENGLISH: Fluent

## COMPUTATIONAL TOOLS KNOWLEDGE

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Languages: C, C++, PYTHON, JAVA, C#, LATEX, SQL, JAVASCRIPT, HTML.  
Software & Libraries: NumPy, SciPy, OpenCV, PyTorch, Tensorflow, Ceres Solver, Scikit-learn, Git, LINUX, OpenGL.

## TOPICS OF INTEREST

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General: Computer Vision, Deep Learning, Photogrammetry, Robotics, Computer Graphics, Artificial Intelligence  
Specific: Image Matching, Structure-from-motion, 3D Reconstruction, 3D Vision