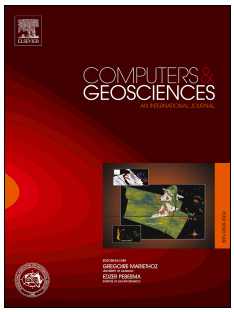
Accepted Manuscript



Fieldwork in Geosciences assisted by ARGeo: A mobile Augmented Reality system

Nicolás F. Gazcón, Juan M. Trippel Nagel, Ernesto A. Bjerg, Silvia M. Castro

PII: S0098-3004(17)31323-7

DOI: 10.1016/j.cageo.2018.09.004

Reference: CAGEO 4173

To appear in: *Computers and Geosciences*

Received Date: 2 February 2018

Revised Date: 9 September 2018

Accepted Date: 20 September 2018

Please cite this article as: Gazcón, Nicolá.F., Trippel Nagel, J.M., Bjerg, E.A., Castro, S.M., Fieldwork in Geosciences assisted by ARGeo: A mobile Augmented Reality system, *Computers and Geosciences* (2018), doi: https://doi.org/10.1016/j.cageo.2018.09.004.

Fieldwork in Geosciences assisted by ARGeo: a mobile Augmented Reality System

Nicolás F. Gazcón[a,b,*], Juan M. Trippel Nagel[a,b], Ernesto A. Bjerg[c,d], Silvia M. Castro[a,b]

[a] *Instituto de Ciencias e Ingeniería de la Computación (CONICET-UNS), Bahía Blanca, Argentina*
[b] *VyGLab, Departamento de Ciencias e Ingeniería de la Computación, Universidad Nacional del Sur, Bahía Blanca, Argentina*
[c] *Instituto Geológico del Sur (CONICET-UNS), Bahía Blanca, Argentina*
[d] *Departamento de Geología, Universidad Nacional del Sur, Bahía Blanca, Argentina*

Abstract

Gathering data on the field is a crucial task in many disciplines. Moreover, in the Geosciences the GPS positioning is relevant to the data acquisition as well as to the planning of the fieldwork. Nowadays, mobile devices are widespread, constituting an accessible platform consisting of single devices coupled with different sensors for data acquisition, such as GPS, compass, magnetometer, etc. Emerging technologies such as Augmented Reality (AR) enable the use of these devices as a software platform to complement the perception of our surrounding environment. Despite the fact that there are several AR applications focused on different aspects of Geosciences, a comprehensive fieldwork oriented system, which can be easily adapted to the community needs, is still missing. Based on a multidisciplinary work between professionals from Geosciences and Computer Sciences, we designed and developed a framework based AR system named ARGeo. The proposed system constitutes a complementing tool for the geologist's fieldwork carefully designed to be used in remote sites, using only

*Corresponding author
Email addresses: nfg@cs.uns.edu.ar (Nicolás F. Gazcón), juan.trippel@cs.uns.edu.ar (Juan M. Trippel Nagel), ebjerg@ingeosur-conicet.gob.ar (Ernesto A. Bjerg), smc@cs.uns.edu.ar (Silvia M. Castro)

First author: contributed to the software design & development, conducted experiments, drafted and revised the manuscript. Second author: contributed to the software design & development. Third and fourth authors: supervised the research project and revised the manuscript.