

# Submit Grant Proposal | VR@Illinois

Submitted by:

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## 1. Name

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## 2. Email

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## 3. Your Status

Faculty

## 4. Your Department

Geography and Geographic Information Science

## 5. Provide a brief summary of the VR/AR project that would be funded by this grant proposal

While Virtual Reality (VR) and Augmented Reality (AR) technologies have improved significantly in recent years, particularly, incorporating geospatial data, there is yet to have adequate efforts to apply those technologies in the teaching and learning of geospatial science and technology. Through this grant I want to develop instructional materials for my Intro to GIS (GEOG/ESE 379) course that will introduce students to the techniques of Augmented Reality (AR) and how AR-GIS integration can produce an immersive data visualization and geo-data validation approach. Besides developing the instructional materials based on a freely available application (e.g., AuGeo from ESRI Labs), I plan to develop an AR-GIS App (either based on ArcGIS API or an open source program) that can give more flexibility for adding and updating geospatial data. Most of the current AR-GIS programs either require paid subscription (e.g., Argis Lens, vGIS, etc.) or only support point features (e.g., AuGeo). A simple AR-GIS App focused on learning this emerging technology should prepare our students better for the expected paradigm shift in geospatial technology.

## 6. How much funding are you requesting?

\$6,000

## 7. Provide a brief preliminary budget of how the funds would be used

Phase-1: Developing AR-GIS instructional materials: - Research Assistant (graduate hourly, student from GIS/CS) in Spring 2020: \$2,000 Phase-2: Developing an App for teaching/learning AR-GIS - Research Assistant (graduate hourly, student from GIS/CS) in Summer 2020: \$4,000 (Considering the availability of ArcGIS site license of the university, I did not include any cost for software here.)

## 8. Describe the anticipated outcomes of your project.

Outcomes from phase 1: - Lecture and reading materials on AR-GIS that integrates well with the current course contents of GEOG/ESE 379 - Lab material with detailed instruction on a hands-

on application of AR-GIS that will replace one of the current labs of GEOG/ESE 379 Outcomes from phase 2: - Survey of existing technological options for AR-GIS (focused on open source alternatives) - Develop an AR-GIS App (either based on an ArcGIS API or an open source program)

9. What is the proposed timeline for your VR project?

Phase 1: Spring 2020 (January 21- May 6); Phase 2: Summer 2020 (May 16 – August 15)

10. Additional information

1. AuGeo App to be used in Phase 1 of the project: <https://www.esri.com/arcgis-blog/products/3d-gis/3d-gis/ar-for-your-gis/> 2. Current AR-GIS programs that require paid subscription/licensing:

a. Argis Lens: <https://www.argis.com/> b. vGIS: <https://www.vgis.io/> c. Augview: <https://www.augview.net/>

3. Open source options for AR-GIS: a. GeoAR (Android based): <https://wiki.52north.org/Projects/GeoAR> b. Marker Based AR (using QGIS and OpenSpace3D): <https://www.youtube.com/watch?v=IWRsTT-Hv9g>

4. Articles/blogs on developing AR-GIS Apps: a. Augmented Reality & GIS: <https://www.esri.com/news/arcuser/0311/augmented-reality-and-gis.html> b. Augmented Reality Using ArcGIS and Layar: <https://www.gisinc.com/blog/our-take-on-technologies/augmented-reality-using-arcgis-and-layar>