Abstract
Project Atlas has developed a web-based application designed to simplify and improve the management of construction projects. Recently, augmented reality (AR) development on mobile platforms has become more mature and feasible. This project’s goal was to develop an iOS AR application that extends the functionality of Project Atlas’ web-based application. The application is built in the latest version of Swift and utilizes Apple’s recently released augmented reality API, ARKit.

The key functionality of the app is to allow a Project Atlas user to be able to log into their account and be able to physically locate project work tasks. Using augmented reality, the project work tasks are displayed on your screen with the illusion that they are being projected into their real space geographic coordinates. ARKit allows us to project objects onto these coordinates and guide users to where these work tasks are located. A user is also able to select a work task and link to the full Project Atlas application in order to view full details and make changes.

Results
The application was completed and met the key requirements to be considered a minimum viable product. The application’s augmented reality experience works as expected to help users find work tasks for a given project when on the construction site.

User Interface
- Written in Swift 4
- Interface was built with XCode’s Interface Builder

Core Library
- ARKit
- MapKit
- CoreLocation
- SceneKit

Data Retrieval and Processing
- Identity Access Management achieved by token-based authentication
- GET user and project data behind a REST API and transform it to be usable for augmented reality

Metrics
- App is fast, stable, and responsive
- App follows Material Design UX to match Project Atlas web-application
- GPS positioning is sufficiently accurate (within 5-10 meters)

Impact
Our project’s impact is that it extends the usability of the Project Atlas web-application. Users can use the mobile app to quickly locate work tasks that would otherwise need to be approximated by hand. Augmented reality is still relatively new to the mobile market, and this functionality gives Project Atlas a unique and valuable feature to their customers.

Summary
Our team learned many new technologies in order to complete this project. We succeeded in accomplishing many of our goals, including all key goals, for the project. Everybody in the team enjoyed the work and learning involved to complete this project.

The project is ready to be published as a 1.0 version on the iOS App Store and will be by the end of 2017. Moving forward, Project Atlas plans to carry on with our work to extend the functionality of the application.

Our team ran into several challenges during development and testing due to augmented reality being new to the team, as well as ARKit being a newly released API at the time of development.

In appreciation of our faculty advisor, Project Atlas, and our company sponsors, we would like like to thank everybody who has helped us accomplish our goals and challenged us to go further with them. Additionally, we’d like to thank UT Dallas for allowing this to happen.