

# Building Immersive Apps Using Xamarin, ARKit, and CoreML



## .NET Developer's Guide to Augmented Reality in iOS: Building Immersive Apps Using Xamarin, ARKit, and C#

by Lee Englestone

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In this article, we'll explore how to build immersive iOS mobile apps using three powerful technologies: Xamarin, ARKit, and CoreML. We'll provide a comprehensive guide on how to get started, create augmented reality experiences, and integrate machine learning models into your apps.

## Getting Started with Xamarin

Xamarin is a cross-platform mobile app development framework that allows you to build native iOS, Android, and Windows apps using C#. It's a great choice for developers who want to write code once and deploy it to multiple platforms. To get started with Xamarin, you'll need to install the following:

- Visual Studio or Visual Studio Code
- Xamarin SDK

- An iOS device or simulator

Once you have everything installed, you can create a new Xamarin project by selecting the "New Project" template from the Visual Studio or Visual Studio Code menu. Select the "Cross-Platform" project type and then choose the "Blank App (Xamarin.Forms)" template. This will create a new project with a simple user interface that you can use to get started.

## Creating Augmented Reality Experiences with ARKit

ARKit is a framework that allows you to create augmented reality experiences on iOS devices. It uses the device's camera to track the real world and then overlays virtual objects onto the scene. To get started with ARKit, you'll need to add the following to your Xamarin project:

```
using ARKit; using SceneKit;
```

Once you have added the necessary references, you can create a new ARSCNView object. This object will be the container for your augmented reality scene. You can add virtual objects to the scene by creating SCNNode objects and adding them to the scene's root node. For example, the following code creates a virtual box and adds it to the scene:

```
var box = new SCNBox(0.1f, 0.1f, 0.1f); var boxNode = new SCNNode(box);
```

To track the real world, you'll need to add an ARSession to your project. The ARSession will manage the camera feed and track the device's movement. You can add an ARSession to your project by creating a new ARSCNView object and setting its Session property to a new ARSession

object. For example, the following code creates an ARSCNView and adds it to the view hierarchy:

```
var arSession = new ARSession(); var arscnView = new ARSCNView { Session
```

## Integrating Machine Learning Models with CoreML

CoreML is a framework that allows you to integrate machine learning models into your iOS apps. You can use CoreML to perform a variety of tasks, such as image recognition, natural language processing, and predictive analytics. To get started with CoreML, you'll need to add the following to your Xamarin project:

```
using CoreML;
```

Once you have added the necessary reference, you can load a machine learning model into your project. You can do this by using the MLModel class. For example, the following code loads the Inceptionv3 image recognition model:

```
var model = MLModel.Create("Inceptionv3", "mlmodel");
```

Once you have loaded a model, you can use it to make predictions. To do this, you'll need to create an MLRequest object and set its model property to the model you want to use. You'll also need to set the input data for the request. For example, the following code creates an MLRequest object and sets its input data to an image:

```
var request = new MLRequest(model); request.Input = new MLDictionary<str
```



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