

# Rufus Mall

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## PERSONAL PROFILE

I am a self-motivated hard worker who enjoys working on unusual tasks, challenging my problem solving skills and working to tight deadlines. I have spent my career building B2B AR/VR applications for mobile devices – these made use of my games programming education to make engaging visualisations that are embedded into native iOS applications. The main technology stack that has been used is Xamarin.iOS for iOS specific code and UI, alongside Monogame for rendering 3D Visuals. I am dedicated to advancing both my personal and professional development and enjoy working on my own projects. In addition I attend meetups and conferences while also using resources such as Pluralsight.com to sharpen my skills.

## Technical Skills

- iOS Development (CSharp, Objective-C and Swift)
- Xcode and Interface builder
- 3D programming using Monogame/OpenGLES, Scenekit
- Cross platform development
- Xamarin Forms
- Augmented reality: ARKit, and creating bespoke AR systems
- Virtual Reality
- UIKit, Autolayout
- Cocoapods
- Optimizing iOS camera pipelines
- Creating Xamarin.iOS bindings
- OpenCV
- Scenekit
- DJI Drone SDK
- Continuous integration

## WORK EXPERIENCE

### **Senior Software Engineer – (February 2015 – August 2017)**

Linknode Ltd (True View Visuals) – <http://www.trueviewvisuals.com>  
Glasgow

As a senior software engineer my responsibilities were to assist the new team that was working on VentusAR and to begin development on our new product UrbanPlanAR. This was an externally funded project developed in tandem with Heriot Watt University. Heriot Watt had a desktop based visual tracking system and it was my task to come up with a strategy to mobilise this in a way that would allow Linknode to integrate this with our development tools and then to build an application powered by this technology within the given time scales. Some of my responsibilities during this time were to:

- Keep track of the team's tasks and report progress during our internal and external meetings while ensuring milestones was delivered on time.
- Give technical Demo's to potential clients and stakeholders
- Think of solutions to solve short comings in the tracking system
- Cross platform app-side architecture

I was also given the opportunity to go to the Xamarin Evolve conference in Atlanta and to travel down to England to meet with potential partners in a bid to research the potential for drone based augmented reality. This took the form of a two day hackathon where I researched the drone API's and then I built a demo application that responded to the movement of the drone and gimbal, manipulated the drones flight controls and I also created an basic augmented reality visualisation. This app was written in Objective-c with the 3d visualisation using OpenGLES.

### **Software Engineer – (May 2013 – February 2015)**

Linknode Ltd  
Glasgow

As a software engineer at a small company my roles were many including helping with application design, maintaining our continuous integration build system, setting up iTunes Connect, solving support cases with clients and once I was even flown to England to help train some new clients. My main task however was to continue to build new features for VentusAR, such as adding features such as support for earth curvature and performance improvements so we could load much more terrain.

## **Junior Software Engineer – (November 2012 – May 2013)**

Linknode Ltd  
Glasgow

After I joined Linknode I quickly began working on porting their AR 3D model viewer “3DTry.IT” to iOS and soon after was tasked with creating an iOS version of their flagship wind farm visualisation app “VentusAR”. This involved using their shared 3D Code and generating a platform specific iOS layer. I added features such as texture mapping – to allow their digital terrain model rendering system to drape images over the terrain such as maps, site layout and satellite imagery. I also implemented various optimisations and fixes to the rendering code.

## **Software Development Intern – (August 2012)**

ThinkBigApps  
Southampton

Specific tasks included implementing utility code such as in-app billing, in-app advertisements and feature unlocking for an existing Android game. I was also tasked with the responsibility of developing the core of an upcoming platformer game on Android that has not yet been released using “AndEngine”.

## **EDUCATION AND MISC**

### **BSC(Hons) 2:1, Computer Games (Software Development) - September 2009 - May 2012.**

Glasgow Caledonian University

University is where I was first exposed to iOS Development. After this I requested to build all my coursework projects on iOS where possible. This included my Honours Project where I researched multiplayer gaming over 3G and built a working client server demo using OpenGL and UDP sockets. A key part of this was implementing network latency compensation and network bandwidth reduction techniques and then analysing the affects of these algorithms using slow motion video and graphing techniques.

### **48 Hour Future City hackathon 3 1<sup>st</sup> Prize – April 2014.**

Glasgow City Council

As one of two developers I helped our team win the £20,000 first prize by building the Android application. The judges mentioned that a key factor in us winning was due to the relatively advanced state of our demo.

### **UrbanPlanAR: BIM Mobile Visualisation in Urban Environments With Occlusion-Aware Augmented Reality – [http://itc.scix.net/data/works/att/LC3\\_2017\\_paper\\_152.pdf](http://itc.scix.net/data/works/att/LC3_2017_paper_152.pdf)**

Greece

As part of my work on UbanPlanAR I was the lead author from Linknode and wrote the majority of our end of the conference paper. This was presented at the “Lean & Computing in Construction Congress” conference in Heraklion, Greece.

## **PERSONAL INTERESTS**

As is the case with many programmers – development is also included in my list of hobbies. I have taken part in a couple of hackathons (including the WRLD developer challenge) and have built numerous demo applications. Some of my most recent endeavours include:

- Creating an OpenGL renderers to show streamed city data from OpenStreetMap and visualising this using Google Cardboard. I also built a demo that uses ARKit to restrict the rendering to planar surfaces.
- Using OpenCV to build a tool to compute intrinsic camera calibration parameters by pointing an iOS device at a chess board
- Using ARKit for high-resolution facial tracking. I used this to drive animatable 3D Meshes using blend weights to create my own “Animoji”

Other than programming my hobbies include playing guitar, watching Netflix and travelling. I also run 20-25 miles a week to help keep fit.

## **REFERENCES**

References are available on request.