Peter Hanula

Gentry leather 3-seat Sofa
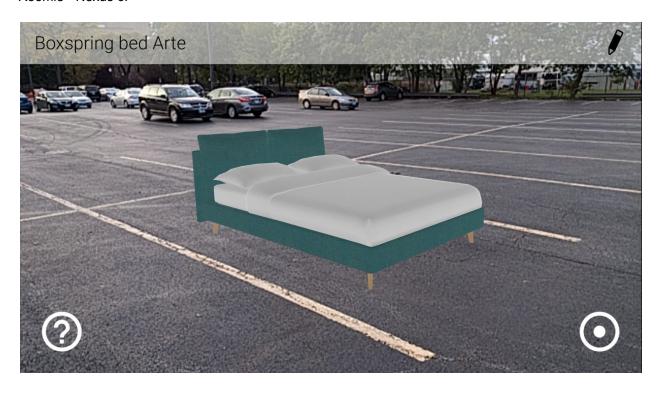
Roomle - Nexus 6P

Roomle - Nexus 6P

Boxspring bed Noblesse

Roomle - Nexus 6P

Boxspring bed Arte

Roomle - Nexus 6P

I tried two augmented reality (AR) android applications for this assignment. The first one was IKEA Catalogue and the second was Roomle. These two applications highlight some of the current limitations with AR in consumer smartphones, and have their own interesting workarounds. It's also important to note the various platforms and frameworks being developed to push the boundaries of AR in consumer products, combining both software and hardware to deliver next-level experiences. Some examples include [ARToolKit](#) by DAQRI, [ARKit](#) by Apple, and [ARCore](#) by Google. The IOS versions of both applications mentioned above already utilize ARKit.

AR technology enables computers to see (through the attached camera) and understand more in the environment around them. By knowing the surrounding environment, the computer can superimpose a computer-generated image on the user's view of the real world, giving virtual objects the same characteristics physical objects would have.

Most smartphones pre-2017 have a standard camera, and all the AR work has to be done on the software side. Since these are phones, you can already imagine some of the limitations they might have. You can set aside lots of processing for better tracking, recognition, etc., but then there won't be much processing left for the computer-generated images/models, and vice versa. With IKEA Catalog, using a printed catalog from IKEA (2017 or 2018) and placing it within the view of the camera supplements the AR experience, like a QR marker. It is used to scale the products perfectly in your room, and you can move around the room while the virtual object stays in place. With Roomle, all you need to do is hold the phone at chest height and aim it towards the floor. This is nice because you don't have to depend on external resources or printing markers, but AR interaction becomes limited.

We are already seeing major trends with AR technology within smartphones. Most notably, special hardware is being developed to minimize processing within the software, allowing more complex and realistic computer-generated images to be superimposed, with better precision. Companies are adding cameras (for stereo vision), trying different types of cameras, adding advanced sensors for depth sensing,

face recognition, and lighting conditions, etc. It's a very experimental time for AR, as companies are trying to figure out what the best methods are. Within a couple months from now, there will be millions of VR and AR ready smartphones.

The future looks very promising. AR will look very realistic that it will be hard to tell apart the computer-generated images from the physical world. Not only that, many types of devices and wearables will be AR/VR ready, and almost everyone will be using it on a regular basis, making it feel natural and opening up opportunities. Mark Zuckerberg in an interview with The New York Times said, "Think about how many of the things around us don't actually need to be physical. Instead of a $500 TV sitting in front of us, what's to keep us from one day having it be a $1 app?"