Chemoscope: An Android Application Integrated Augmented Reality and Mixed Reality to Assist Chemistry Learners

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Learning Chemistry is very essential. However, in some countries, the conditions to learn Chemistry (facility to do experiments, real chemical compounds to observe,…) are not fully accessible. With the power of Augmented/Mixed Reality, my Android application – Chemoscope will help bring Chemistry closer to learners and make learning it more visual, safer and handier. Chemoscope includes three modules: 3DChem, Chemict and Chemies. In 3DChem, students can observe chemical 3D structures/crystals, watch 360-degree animations about chemical phenomenon and even better, it enables users to do virtual 3D experiments with all the equipment and reactions are illustrated as real as possible and some experiment steps must be taken as required in reality. It is developed with Unity and Vuforia: Vuforia helps integrate AR/MR and Unity handles the 3D interaction. For the AR/MR experiments, each object is added a component of booleans to indicate its attributes: equipment or chemical compound, still on the CUPBOARD or placed in the PLAYGROUND by the POINTER,reactable or not.The POINTER is a cube augmented on a smaller image used instead of a controller, which would somehow reduce user experience compared to other AR/MR apps but overall, it make the application cheaper and easier to purchase as no external hardware needed. Chemict and Chemies aim to assist learning theory. Chemict – Chemistry Dictionary comes with a newer camera search method: long pressing or scrolling a finger on screen to input. Chemies includes a curriculum-based Textbook Summary presented by layers of Android nested TabLayout. Although Chemoscope is still under development, the survey carried out has shown the promising results: the app does raise students' enthusiasm and bring Chemistry closer to the learners.

Awards Won:

Fourth Award of $500

Oracle Academy: Award of $5,000 for outstanding project in the systems software category.

GoDaddy: $1,500 Mobile Application Award