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| **Virtual hands-on workshop : “Enjoyable Introduction to Programming using Drawings”**  **by Dr. Jeyakesavan Veerasamy, CS faculty,**  **The University of Texas at Dallas, USA** |  |

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Complete workshop materials @ [www.utdallas.edu/~jeyv/KAJS](http://www.utdallas.edu/~jeyv/KAJS)

How did we learn to ride a bicycle? We had to learn 2 things together: Balancing & Pedaling to go forward. That is why we used training wheels to take care of balancing until we mastered pedaling. Learning to program has similar characteristics. When students are introduced to C/C++/Java language directly, they are expected to learn & apply the syntax and logic together. After struggling with syntax for hours, good % of students want to run away & never come back to programming!

Carnegie Mellon University (CMU) and a few other universities have recognized this issue and devised visual programming environments to help the freshers. Idea is to use drag-and-drop programming and avoid the syntax errors all-together. Visual environment also enables the students to test the logic quickly and enjoy the learning experience. [Alice](http://www.alice.org) is an innovative 3D programming environment that makes it easy to create an animation for telling a story, playing an interactive game, or a video to share on the web. Alice is a freely available teaching tool designed to be a student's first exposure to programming. It allows students to learn fundamental programming concepts in the context of creating animated movies and simple video games. In Alice, 3-D objects (e.g., people, animals, and vehicles) populate a virtual world and students create a program to animate the objects. So, we encourage all the students who are new to programming to complete “Enjoyable introduction to programming using Alice” workshop first.

This workshop can be used as Step 2 before going to C/C++/Java. KhanAcademy-JavaScript environment is FREE and web-based – it enables the students to work with small pieces of code & create dazzling colorful pictures. Basically, programs are used to draw in a canvass area. Students are introduced to free-form typing and syntax errors in a gentle way. Friendly web-page gives appropriate guidance to resolve the syntax errors. Impressive GUI encourages the students to hang on and learn the “serious” programming concepts. After completing this workshop, we strongly believe that the students can handle C/C++/Java with lot more confidence. With this 3-step approach “Alice --> Drawings --> C/C++/Java”, we can reduce the students’ frustrations drastically and make them confident & passionate about programming.