



Report – Workshop for Students: Programming Arduino Board with MATLAB

by Dr Yeap Gik Hong and Dr Leow Cheah Wei



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Dr. Leow Cheah Wei from TechSource Systems has conducted a hands-on workshop on using MATLAB with Arduino at KDU Penang University College on 17th October 2017. The hands-on workshop was being conducted at the Computer Aided Design Lab (CAD Lab) and attended by 40 students who are studying EN0564 Analogue Electronics and Instrumentation course. Arduino has been a popular microcontroller board used by university students, hobbyists and even younger school kids. While MATLAB is a popular engineering design software used by many universities worldwide in teaching of various engineering subjects such as Control Systems and Microcontroller. This workshop introduced the students on the technique to connect the two tools together.

With the advancement of artificial intelligence technologies, there is a strong demand for engineers with the skills and knowledge to develop complex and highly integrated embedded software. With the C code generation capability of MATLAB, students can deploy what they have learnt in theory in a workflow known as model-based design (MBD). Using MATLAB[®], Simulink[®] and Embedded Coder[®], students learn how to manage the growing complexity of today's embedded systems by designing and simulating an executable model; rigorously validating, testing, and debugging it; and generating code for an embedded target. By fostering collaboration and knowledge sharing between academia and industry, the workshop is meant to help prepare the students for the engineering challenges that they will be facing in their future jobs.

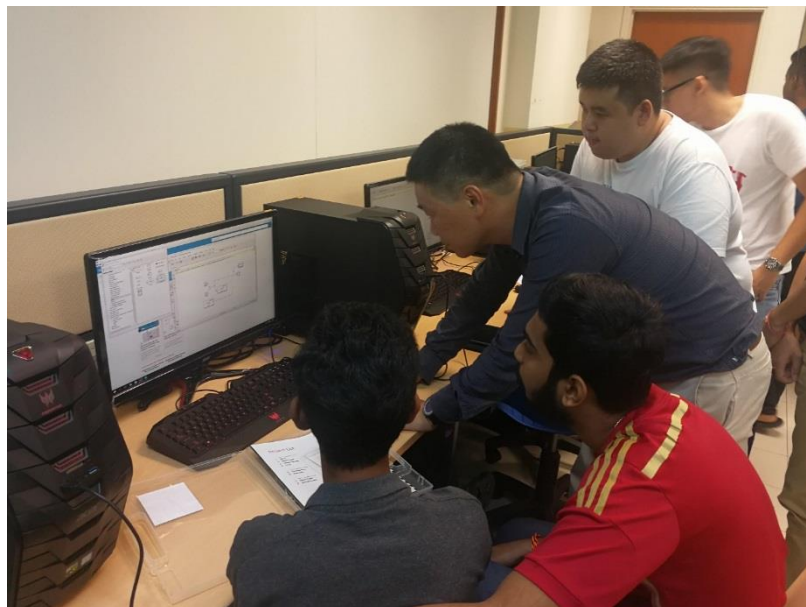
During the workshop, students are shown the step-by-step instructions to setup the development environment in MATLAB. Subsequently, students learnt how to simulate the system in Simulink, perform C code generation from the model, and deploy the generated code automatically to Arduino. It is envisioned that students can concentrate in realizing their algorithm and not overwhelmed by debugging the code after attended the workshop. The material used in the workshop can be accessed from the link below and readers are welcomed to try it out.

<https://www.iotstreets.com/#/designviews/diaryview/18/78>

The workshop was very useful to students, as they have learnt new knowledge and skills which will be beneficial to them when they start to carry out their final year project in the near future. The workshop was concluded with souvenir presentation and closing remarks by Dr. Yeap Gik Hong.



40 Students Attended the Programming Arduino Board with MATLAB conducted by Dr Leow Cheah Wei



Dr Leow Cheah Wei Showing the Students How to Simulate the Model-Based Design (MBD) in Simulink



Dr Yeap Gik Hong Presented the Token of Appreciation to Dr Leow Cheah Wei after the Workshop