

## **GHTC 2017 Tutorials**

This year the 2017 IEEE Global Humanitarian Technology Conference will be offering two tutorials on October 19, 2017. Tutorials and Pre-Conference meetings on Thursday October 19, 2017 with a welcome reception Thursday evening. The Conference opens Friday morning and runs through Sunday October 22, 2017 until 12:00 PM. See below for more information on this years tutorials!

### **High Quality, Low Cost Education with the Raspberry Pi**

*Abstract* | The authors will use experience derived from authoring two tutorial style books on the use of the Raspberry Pi Zero and Raspberry Pi single board computers (SBCs), in helping people learn programming in Python and implement practical projects to present a practical tutorial on using the Pi Zero, a low cost solution designed specifically for educational purposes.

Low cost kits are provided, specifically for education, by the Raspberry Pi Foundation in conjunction with Google. These kits and modifications for optimal educational outcomes, and an enriched experience will be briefly discussed.

The tutorial will consist of examples of projects and code samples that can be quickly adapted for various learning situations. A hardware list or BOM, populated and optimized for cost and effective learning will be provided.

The Raspberry Pi family and Arduino Family can also be used for education, as alternates, or in combination with the Raspberry Pi Zero and the differences will be highlighted and discussed. Numerous, continuously evolving web resources as well as crowdfunded hardware implementations are available, and the method of adapting them into educational settings will be briefly discussed.

#### **Tutorial Presented By:**

**Srihari Yamanoor**

**Narasimha Sai Yamanoor**

### **Internet-of-Things (IoT)-enabled Water Quality Testing and Analysis**

*Abstract* | The U.N. estimates that by 2025, forty-eight nations, with combined populations of 2.8 billion, will face freshwater scarcity. Fifty percent of worldwide groundwater is unsuitable for drinking because of pollution and only about .007% of the water on earth is accessible for human use.

Every 20 seconds, a child dies from a water-related disease. Children in polluted environments

often carry about 1,000 parasitic worms in their bodies at any time. The recent reports indicate that the diseases due to the consumption of contaminated water are increasing and causing more than 3.4 million deaths each year among human beings worldwide, also the increasing water pollution is becoming a big threat to water habitat.

The proposed tutorial provides two parts of the program. The first part covers the basic principles of Internet of Things (IoT), design, infrastructure, connectivity and the core concepts of IoT such as sensing, processing and reporting the data to the cloud. The second part describes the implementation, prototype and few use cases.

The attendees will learn various types of IoT hardware such as Intel and ARM mBed family, Sensor connectivity protocols including UART, GPIO and I2C. The instructor will also cover topics on Cloud platform and Analytics. In this workshop, the Cloud technologies explained are AWS IoT, IBM Bluemix, Microsoft Azure and GE Predix. At the end, the audience will have an opportunity to witness few demonstrations on analytics.

### **Tutorial Presented By:**

**Tokunbo Ogunfunmi** (*Santa Clara University, USA*)

**Shivakaumar Mathapathi** (*Santa Clara University, USA*)

## **Tutorial Fees**

<b>Registration Type</b>	<b>Registration Through 8/31/2017</b>	<b>Registration Through 10/18/2017</b>	<b>On-Site Registration</b>
IEEE Member	\$150.00	\$200.00	\$200.00
Non-Member	\$250.00	\$300.00	\$300.00
Student	\$75.00	\$100.00	\$100.00

## **Are you presenting a tutorial? View the important information below!**

Tutorial organizers are responsible of the scientific organization and advertising of the event and the definition of the Tutorial program. GHTC local arrangements will provide rooms, two coffee breaks per day and A/V equipments. As in previous years, tutorials registration will follow the registration system:

- All attendees for the tutorials are required to register (see the example rates table below). If the participant wants only to attend the tutorial, and not the conference, they must pay not only the fee for the tutorial but also the fee for attendance at one day of the conference.
- The organizers of each accepted tutorial will receive one free conference registration per tutorial.
- 50% of tutorial registration fees collected by the conference will be paid to the tutorial organizer to help defray any presenter travel or other expenses.
- GHTC will not reimburse the tutorial presenter's travel and hotel expenses.
- The GHTC will include information about all scheduled tutorials in its advertising materials and on the conference web site but the GHTC committee is not solely responsible for audience development. Tutorial presenters and their organizations are encouraged to do their own advertising and outreach to potential attendees.

If any GHTC tutorial does not secure approximately 5 paid participants by 15 days before the tutorial is due to take place, the GHTC organizers reserve the sole right to cancel this tutorial, and return any fees paid. While GHTC will immediately notify the tutorial organiser in the event of such cancellation, GHTC organizer accept no liability of any kind for such cancellation, including any expenses incurred by the tutorial organiser. The tutorial organiser confirms their understanding and acceptance of this as condition of making a submission.