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Imagination, Microchip and Digilent deliver cutting-edge IoT curriculum for universities worldwide

Course helps students understand connected embedded systems from microcontroller to cloud

LONDON, April 19, 2016 (GLOBE NEWSWIRE) -- Imagination Technologies (IMG.L) and Microchip Technology, together with Digilent Inc. announce the Connected MCU Lab, a new course developed through the companies' respective university programs. The semester-long curriculum, available to universities worldwide, is designed to be an introductory and first microcontroller (MCU) class taken by undergraduate electronic engineering and computer science students. It delivers an interactive and compelling start to connected embedded systems education – covering MCUs and input/output (I/O), real-time operating system concepts, advanced MIPS processor architecture and cloud connectivity – all presented in a fresh and jargon-free style.

The Connected MCU Lab takes a hands-on approach, leveraging a Wi-Fi® enabled development board, tools, software, and cloud services – everything needed to design innovative Internet of Things (IoT) solutions. Lessons are based around the chipKIT™ Wi-FIRE board from Digilent Inc., which uses Microchip's popular PIC32MZ MCU incorporating a 32-bit MIPS M-Class CPU from Imagination. A chipKIT Basic I/O Shield is used for expansion along with a PICkit™ 3 In-Circuit Debugger from Microchip. Teachers and students have free access to professional software tools including MPLAB® X Integrated Development Environment, MPLAB XC32 C compiler, and MPLAB Harmony Software Development Framework from Microchip, as well as Imagination's cloud technologies.

The Connected MCU Lab curriculum, authored by Dr. Alexander Dean of North Carolina State University, includes presentation slides for each module, a student guide, exercises, tests, solutions, and an Instructor's Guide.

Says Robert Owen, manager, Worldwide University Programme at Imagination: "The need for internet connectivity and the demand for ease of development are rapidly driving the embedded world towards 32-bit MCUs. As a result, the next generation of embedded system designers and developers need to understand the techniques of connecting embedded systems to the cloud. This is an urgent teaching requirement as many college courses today are still using 8-bit and 16-bit MCUs. The Connected MCU Lab course makes it easy to give the next generation of engineers the skills they need. The 32-bit MIPS CPUs at the heart of Microchip's popular PIC32 MCUs are ideal for teaching and projects, and the Wi-FIRE board is powerful enough to support very ambitious projects, enabling this course to provide a foundation on which students can grow throughout their degree."

The MIPS CPU IP core in the PIC32 MCU is part of the same family as "MIPSfpga," a soft IP core used in many computer architecture and SoC courses, thereby creating powerful synergy between two vital branches of engineering education.

Says Derek Carlson, vice president, development tools at Microchip Technology: "This latest offering demonstrates our ongoing commitment to delivering the highest standard of embedded education to the academic communities. By providing access to our popular PIC32MZ family of high-performance MCUs, we are empowering next-generation engineers and research students to better understand the increasing demands of future applications and gain hands-on experience of IoT design. Additionally, our MPLAB X Integrated Development Environment and MPLAB Harmony Integrated Software Framework will help students accelerate software integration, and gain deeper insight into product development cycles."

Says Steve Johnson, president at Digilent Inc.: "At Digilent, our mission is to make electrical engineering and design technologies understandable and accessible to all, by providing high-value, industry-relevant educational tools and curriculum to educators and students. We are proud to partner with Imagination and Microchip to offer this new course that introduces students to the exciting world of cloud-connected embedded devices. As part of the Connected MCU Lab, the chipKIT Wi-FIRE boards will help students get projects up and running quickly, and open a large selection of options they can utilize in the development process to empower them to create ambitious solutions."

Eighteen universities across Australia, China, Germany, Israel, Portugal, Russia and the United Kingdom participated in the Connected MCU Lab beta program. Academics are welcome to visit www.imgtec.com/university to register and access the course materials.

Supporting quotes

"The Connected MCU Lab is an exciting program and a great complement to programs we are already offering in smart embedded systems. For students, having a hands-on approach to understanding the potential of 32-bit microcontrollers and cloud connectivity is extremely critical as it gives them insight into a current technology being used in the industry and prepares them well as they embark on careers in this field."

– John Kneen, Adjunct Professor, School of Engineering, RMIT University, Australia

"Some of the areas of research that my advanced students are involved in include the fields of broadband access networks, computer communications and monitoring. However, to groom students of a high caliber we need to have strong foundational courses that instill the basics of technology. The Connected MCU Lab program is one of the best starter courses designed for undergraduate electronic engineering and computer science students and we are very happy to be part of this program."

– Liu Jing Hao, Associate Professor, School of Electronic Information Engineering, Tianjin University, China

"We are delighted to be among the first users of the Connected MCU Lab program as it enables our students to experiment with various aspects of IoT design and learn the essentials of microcontrollers and cloud connectivity. This will help students move beyond the theoretical to benefit from hands-on learning about connected embedded devices."

– Professor Frank Grimm, Dept. of Informatics, University of Applied Sciences Zwickau (WHZ), Germany

“At Holon Institute of Technology (HIT) we take great pride in teaching innovative and advanced technologies to our students. That’s why we are very excited to announce that starting in July 2016 we will offer the Connected MCU Lab course as part of our Real Time Systems Laboratory. We strongly believe that this course will give our undergraduate students the right kind of exposure to understanding real time embedded systems and prepare them for the professional world.”

– Dr. Nonel Thirer, Faculty of Engineering, Senior Lecturer, Holon Institute of Technology, Israel

“MIET is part of Imagination’s MIPSfpga and Connected MCU Lab beta-testing programs. Our students have benefited from the MIPSfpga hands-on workshops and we are looking forward to implementing the Connected MCU Lab at our university because this course offers an up-to-date and well-structured curriculum for teaching embedded solutions to future engineers.”

– Alexey Pereverzev, Head of Computer Engineering, National Research University of Electronic Technology (MIET), Russia

“In our EEE programme, we like to maximize the combination of hardware and software tools we offer our students as part of the curriculum. This empowers our budding engineers to develop integrated products in various fields including signal processing, image processing, video processing, and communications. With the explosion of the Internet of Things (IoT) we were looking to embed related technologies within our curriculum early. The Connected MCU Lab from Imagination is a great option for our engineering students. It can provide a strong foundation in embedded systems and connectivity, providing the full end-to-end IoT solutions that we require.”

– Dr. Gordon Morison, Assistant Head of Department, Audio and Electronics, Glasgow Caledonian University, U.K.

About Digilent Inc.
Digilent Inc. is a leading electrical engineering products company serving students, universities, and OEMs worldwide with technology-based educational design tools. Based in Pullman, Washington, Digilent designs, manufactures, and distributes its electronic design tools on a worldwide basis. Since its founding in 2000, Digilent products can now be found in over 2000 universities in more than 70 countries throughout the world. As a multinational company with offices in the US, China, and Romania, Digilent is able to provide high-value, expert quality solutions for a variety of customer needs. In addition to its own products, Digilent performs OEM design and manufacturing services for leading technology companies including Xilinx, Analog Devices, and Cypress Semiconductor. www.digilentinc.com.

About Microchip Technology’s Academic Program
The Academic Program demonstrates Microchip's on-going commitment to education by offering unique benefits and resources for educators, researchers and students worldwide. We are a resource for academia to help integrate Microchip products and technologies into the classroom. Visit: http://www.microchip.com/development-tools/academic-corner.

About Microchip Technology
Microchip Technology Inc. (NASDAQ:MCHP) is a leading provider of microcontroller, mixed-signal, analog and Flash-IP solutions, providing low-risk product development, lower total

system cost and faster time to market for thousands of diverse customer applications worldwide. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support along with dependable delivery and quality. For more information, visit the Microchip website at http://www.microchip.com.

About the Imagination University Program
The Imagination University Program (IUP) is designed to provide practical help to teachers around the world so that they can use Imagination's technologies in courses and student projects. The focus is on providing the four vital elements needed to teach a course: a suitable hardware platform at a reasonable price, free software development tools, effective technical support, and excellent teaching materials that serve genuine teaching needs. The IUP is open to all members of academia. For more information, visit http://community.imgtec.com/university.

About Imagination Technologies
Imagination is a global technology leader whose products touch the lives of billions of people across the globe. The company's broad range of silicon IP (intellectual property) includes the key processing blocks needed to create the SoCs (Systems on Chips) that power all mobile, consumer and embedded electronics. Its unique software IP, infrastructure technologies and system solutions enable its customers to get to market quickly with complete and highly differentiated SoC platforms. Imagination's licensees include many of the world's leading semiconductor manufacturers, network operators and OEMs/ODMs who are creating some of the world's most iconic products. See: www.imgtec.com.

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