Blockchain Application Development Using Hyperledger and Ethereum

October 05-09, 2020

Organized by

Department of Computer Science & Engg.

National Institute of Technology Meghalaya

Bijini Complex, Shillong-793003

Course Coordinator

Dr. A. P. Singh, NIT Meghalaya

Introduction

Blockchain over recent years has been extolled as a revolutionary technology. Since the pioneer work in 2008, researchers have spent countless hours exploring its enormous potential, and today this new technology has become a source of new hope with its broad spectrum of applications. Examples include Supply-Chain, Insurance, KYC, E-voting, Land-Registry, Financial Services, IoT security, Healthcare, Copyright Protection, Smart Agriculture, E-governance and many more. A new addition to the power of blockchain technology comes with the support of smart contracts, an executable codes on blockchain, written in high-level turing complete language. The role of smart contract is to remove all intermediary untrusted third parties between the participating members and to automatically execute and enforce the terms of agreement betweenthem.

Systematic and focused introductory lectures, including hands-on sessions, will be delivered over five days, which helps participants to segue into this exciting field of emerging technology. This course has been specially designed for the students, researchers, faculties, and industry personnel to provide them with an introductory yet exhaustive knowledge. It is expected that the course will help in enabling the participants to contribute to the academics, researches and industry in the field ofblockchain.

Broad Scope

The topics to be covered in the course will range from preliminaries, basic cryptographic primitives, distributed algorithms, blockchain basics, bitcoin and mining mechanisms, smart contract programming, and several real life case studies. The course features theory lectures as well as hands-on laboratory session on the development of various blockchain-based systems to solve real-worldproblems.

Target Audience

The course is suitable for Faculty Members, Research Scholars, and Industry Professionals.

How to apply

No registration fee will be charged from the participants.

To register, please visit:
https://atalacademy.aicte-india.org/signup

More Info: https://www.aicte-india.org/atal

Due to limited seats, applications will be considered on First Come First Serve basis.

Course Contents

- ❖ Introduction to Blockchain
- ❖ Symmetric & Asymmetric Key Cryptography
- ❖ Introduction to Crypto-currencies Bitcoin & Ethereum
- ❖ Hands-on Session on Ethereum Setup & Geth/Truffle/Ganache/ Remix
- ❖ Hands-on Session on Ethereum Clients & Network/ Web3 Implementation
- ❖ Distributed Consensus Algorithms
- ❖ Introduction to Smart Contractand SolidityLanguage
- ❖ Hands-on Session on Developing andDeployment of SmartContracts
- ❖ Introduction to HyperledgerFabric
- ❖ Hands-on Session on Hyperledger Setup/Sample Fabric Application/Integrating to Blockchain
- ❖ Hands-on Session on Building your own Network
- ❖ Hands-on Session on Real Case Studies: Healthcare, Renewable Energy, Supply Chain, Asset Management, File Tracking System,etc.
- ❖ State-of-the-art ResearchHighlights

Contact:

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About NIT Meghalaya

The National Institute of Technology (NIT) Meghalaya is one among the thirty NITs in India established under the NIT Act 2007 (Amended 2012) of the Parliament of India as Institutes of National Importance with full funding support from the Ministry of Human Resource Development, Government of India. The nearest railway station is Guwahati. From the railway station, one can travel by bus or shared taxi to Shillong. It takes about 3 hours to reach Shillong. After reaching Shillong, one can hire local taxi to reach the campus at Bijni Complex, Laitumkhrah.

Course Schedule

Dates	10:00 AM to 11:30 AM	11:30 AM to 12.00 PM	12.00 PM to 1.30 PM	1.30 PM to 2:30 PM	2:30 PM to 4.00 PM
05.10.2020 (Monday)	Registration and Inauguration	Break	Session 1 **Introduction to Blockchain**	Break	Session 2 **Symmetric & Asymmetric Key Cryptography**
06.10.2020 (Tuesday)	Session 3 **Introduction to Crypto-currencies : Bitcoin & Ethereum**	Break	Session 4 **Hands-on Session on Ethereum Setup & Geth/Truffle/Ganache/ Remix**	Break	Session 5 **Hands-on Session on Ethereum Clients & Network/ Web3 Implementation**
07.10.2020 (Wednesday)	Session 6 **Distributed Consensus Algorithms**	Break	Session 7 **Introduction to Smart Contract and Solidity Language**	Break	Session 8 **Hands-on Session on Developing andDeployment of SmartContracts**
08.10.2020 (Thursday)	Session 9 **Introduction to Hyperledger Fabric**	Break	Session 10 **Hands-on Session on Hyperledger Setup/Sample Fabric Application/Integrating to Blockchain**	Break	Session 11 **Hands-on Session on Building your own Network**
09.10.2020 (Friday)	Session12 **State-of-the-artResearch Highlights**	Break	Session 13 **Hands-on Session on Real Case Studies**	Break	Session 14 **Hands-on Session on Real Case Studies. Valedictory ceremony**