e-Niyama Labs
Engineering the rules of learning

Projects

Goal: Gain hands-on experience with current industry technologies

Details: Students would be working on developing solutions in the areas related to below technologies using agile methodologies – scrum (Sprint Kick-Off, Sprint Planning, Daily Standup, backlog management, retrospective, sprint demo)

- IoT
  - Home Automation – C, UC, RTOS, STM32F4DISCOVERY, AWS (IoT Core, Lambda, S3, DynamoDB, API Gateway, MQTT), HMI – Qt, Python/C++, Wi-Fi module (ESP32/ESP8266), LoRa, AI based access control
  - Asset Tracking – C, UC, RTOS, STM32F4DISCOVERY, AWS, LoRA/GPS/UWB
  - Wireless Sensor Networking
- Automotive application
  - Infotainment – C, C++, Qt, Linux, Raspberry Pi
    - HMI Application development
    - BT – Profiles: Pairing, HFP, PBAP, MAP
  - Telematics
  - Automotive Diag/Scan tool – Qt, CAN, C++, PC based Linux
  - Test Automation Framework
- Robotics
  - Pick and Place Robotic Arm – C, UC, RTOS, STM32F4DISCOVERY
  - AI-Powered Sorting Robot – Raspberry Pi
  - Quadcopter/Drone

Technologies **:** IoT protocols, AWS, Vehicle networks, GPS, Wireless networking, Python scripting

Tools:

- Build systems -Buildroot and Yocto ()
- Code repositories - GitHub/git(),
- Project Management Tools - Jira, confluence
- Software Design Tools - draw.io (UML Diagrams)
- Unit Testing - gTest (Unit Testing)
- code documentation – doxygen
- Static Analysis – Lint, Cppcheck
- Code Review - git

Duration: 4 Week (Theory + Lab sessions)

Module Assessment:

- Sprint Retrospective meetings
- Sprint/Project Demos
  - Sprint Demo
  - Design walkthrough
  - Code walkthrough