INFO3600 Major Development Project, s2 2007

Project Offerings


Project 1: MSML Module
Supervisor from Avaya: Glen Tregoning, gtregoning@avaya.com, phone: 9352 9293
Supervisor from the School: TBA

Description:
The Media Sessions Markup Language (MSML) along with SIP enables the interface and control of IP Media server services such as audio and video conferencing. MSML is gaining favour in VoIP and IP Multimedia Subsystem (IMS) networks as the standard along with MOML.

The goal of the project is to implement a C++ version of a media resource Client MSML module that could be used to provide a basic subset of audio and video conferencing features. Stretch goal could be to port to a commercial device such as a PowerQuick controller.

Requirements/skills:
- Strong interest in communications/network protocol implementation
- C++ and software development skills
- Team player and self motivated
- Able to travel to Nth Ryde for project meetings one day per week

Learning outcomes:
- Learn practical aspects of IP network communications protocols such as SIP, RTP, and MSML/MOML.
- Ability to digest IETF standards
- Understand audio and video conferencing and media servers.
- Build on team project skills, project management, estimations etc.
- Working in a commercial R&D environment.

Project 2: Telephony Configuration/Control Gateway - Telephony Feature Access and Configuration via Various Communication Mediums

Supervisor from Avaya: Glen Tregoning, gtregoning@avaya.com, phone: 9352 9293
Supervisor from the School: TBA

Description:
The goal of this project is to implement a gateway allowing users to access and configure telephony functionality over various communication/information protocols. This gateway will allow a person to both manually access telephone features from remote locations, as well as automatically configure functionality based on the output of selected data sources. The telephony features accessed or configured by this system could include: call forwarding; speed-dial/phone contact information; issuing call-back requests; event notifications/reminders; and conference call scheduling. The protocols or mediums supported by this gateway may include: SMS/MSS, IM (instant messaging e.g. Jabber/SIP), iCal subscriptions (Calendar), RSS, Web/Mobile Web access (XHTML/WML), or others where appropriate.

Requirements/skills:
- Strong interest in communications/network protocol implementation
- Java or C++ experience as well as Software development skills
- Team player and self motivated
- Able to travel to North Ryde for project meetings one day per week

Learning outcomes:
- Learn practical aspects of IP network communications protocols such as SIP, H323 and XMPP (Jabber).
- Ability to digest IETF/RFC standards.
- Learn various communication and information protocols.
- Gain experience using Open Source libraries.
- Build on Team project skills, project management, estimations etc.
- Working in a commercial R&D environment

Project 3: Network Packet Capture Comparison Tool
Supervisor from Avaya: Glen Tregoning, gtreoning@avaya.com, phone: 9352 9293
Supervisor from the School: TBA

Description:
The goal of this project is to implement a tool to compare and display the difference of two (or more) network captures in the form of a textual or visual diff. This tool should have a focus on IP Telephony protocols such as SIP and/or H323. The value of this tool would be to identify differences between various protocol implementations, perform protocol based regression testing and to verify RFC/IETF protocol compliance.

Requirements/skills:
- Strong interest in communications/network protocol implementation
- C++ and software development skills
- Team player and self motivated
- Able to travel to Nth Ryde for project meetings one day per week

Learning outcomes:
- Learn practical aspects of IP network communications protocols such as SIP, H323
- Ability to digest IETF/RFC standards
- Learn various communication and information protocols
- Gain experience using Open Source libraries
- Build on Team project skills, project management, estimations etc.
- Working in a commercial R&D environment

Project 4 below is not available any more.

Project 4: Controlling a Video Conference System from a VoIP Phone
Supervisor from Avaya: Toby Allen, allen@avaya.com
Supervisor from the School: TBA

Description:
The aim of this project is to be able to control a video conference system from a VoIP (Voice over IP) phone. This could be expanded to control a rooms lighting, and sound etc. just like a lecture theatre system. The value of this would be to unify the control of multiple conference/room systems onto a single telephone’s screen.

Requirements/skills:
- Strong interest in communications/network protocol implementation
C++ and software development skills
Team player and self motivated
Able to travel to North Ryde for project meetings one day per week.

Learning outcomes:
- Exposure to server programming
- Learn practical aspects of network communications protocols
- Ability to digest IETF/RFC standards
- Learn various communication and information protocols
- Understand audio and video conferencing and media servers
- Gain experience using Open Source libraries
- Build on team project skills, project management, estimations etc.
- Working in a commercial R&D environment

Projects at Capital Markets Surveillance Services (CMSS) Systems
http://www.cmss-systems.com/

Working with CMSS provides a unique opportunity for students to gain exposure in quality software development and also in financial market applications.

Project 5: Distributed Regression Testing Tool
Supervisor from CMSS Systems: Dr Robert Lang, rlang@cmss-systems.com, phone: 8083 9048
Supervisor from the School: TBA

Capital Markets Surveillance Services writes software which detects unusual patterns of trading in stockmarkets. To effectively utilise data servers, an application is required which allows developers to submit analysis tasks to a central server which allocates them to available hosts.

Required functionality:
- Browser interface which allows users to submit new tasks as well as browse and cancel scheduled tasks.
- Users able to create and modify templates to allow quick resubmission of common tasks.
- Integration with an existing Java scheduling API.
- Client side scripts which execute tasks and produce relevant reports and status notifications.

Requirements/skills:
Group size: 2 or 3 students with good Java, JSP and system integration skills

Project 6: Market Data Correctness Testing Tool
Supervisor from CMSS Systems: Dr Robert Lang, rlang@cmss-systems.com, phone: 8083 9048
Supervisor from the School: TBA

Capital Markets Surveillance Services receives data from various stock exchanges around the world and merges confidential stock broker data with these feeds. Minor inaccuracies in the data can cause a flow on effect reducing the overall quality of the data. Development of an application is required to traverse through market data streams looking for data anomalies and log inaccuracies.

Required functionality:
- Command driven tool to look for specific types of data inaccuracies
- Framework to support future pluggable algorithms
- Ability to log inaccuracies in a form which can be followed up by QA
Requirements/skills:
Group size: 1 to 2 students with good Java skills

Project 7: Financial market application unit testing framework
Supervisor from CMSS Systems: Dr Robert Lang, rlang@cmss-systems.com, phone: 8083 9048
Supervisor from the School: TBA

Capital Markets Surveillance Services writes software which detects unusual patterns of trading in stockmarkets. This project is to design and implement a framework which runs our software through artificial data sets in order to ensure software quality and reliability. There is considerable scope for design in this project: You will be responsible for the structure of the data store as well as the implementation of the test framework.

Required functionality:

• Unit testing is abstracted and pluggable to allow different programs to use the same test harness and data stores.
• Reporting framework which summarises successes and failures.
• Integration with the Maven build system.
• Implemented in Java.

Requirements/skills:
Group size: 2 students with good Java, JSP and system integration skills.

Updated: 25 July 2007