

Learning Cloud & Grid Computing through implementing innovative solutions to real-world scenarios

In this paper, we shared on how students and staff from a Singapore tertiary institution acquired and reinforced their learning of Cloud Computing & Grid technologies through participation in applied projects on real-life scenarios in Healthcare, Mobile etc. Centre for IT Innovation (CITI) at School of Information Technology (SIT), Nanyang Polytechnic, is a key platform for staff and students to develop innovative and effective IT Software solutions and services for the industry. A hallmark of SIT is our strong collaboration with industry to provide effective and relevant learning experience to our students.

NYP's practice- and application-oriented teaching and learning philosophy emulates the real-world work environment on campus to provide students with an enriching experience which will prepare them well for their future career. To ensure quality deliverables and adhere to the project schedule, a software engineering process based on Agile/DevOps is being adopted. An important and integral component is industry project work with cost, quality, reliability and deadline constraints, and often requiring multidisciplinary capabilities. The accumulated experience and knowledge from extensive industry project development is systematically captured in a rich repository of application-oriented and established solutions over a wide range of IT and other disciplines.

The paper will share case studies on 3 projects that have been developed by students with staff mentorship in resolving real-life problems and how they applied the knowledge of Cloud and Grid learned in class.

Case 1: SOSHeart.

One out of three deaths in Singapore is due to heart disease and stroke. Early CPR has been shown to be a vital link in the "Chain of Survival" for out-of-hospital cardiac arrest. One gap is the absence of means for heart attack victims to get the prompt treatment from a CPR-certified citizens. The study aims to develop a mobile app, SOSHeart, to provide location - based services to heart patients to call for help from caregivers as well as providing the personal medical data and other useful information in heart attack emergency. SOSHeart is an Android-based mobile app with cloud support, services and repository

Case 2 : Presence-Aware Grid Computing

A conventional grid computing allows members to share computing resources in a network of computers in a distributed and coordinated manner. Accessing the grid network is usually done at a user's workstation, either via a command line or web-based interface. The complexity of sharing computing resources in a grid network is hidden from the users; there is no intuitive means for users to assess or monitor the grid network utilization before submitting a job. Thus we are proposing for a new system for implementing grid computing submission, monitoring and scheduling using Instant Messaging in a manner that can minimise if not overcome the limitations of conventional grid computing system

Case 3: Dementia Patients Locator

With the increase in Singapore's ageing population, comes an increase in the number of persons with dementia. One in 10 seniors aged 60 and above is expected to have dementia. Our solution leverages on cloud, mobile, communication and geospatial technology to build an interactive platform where caregivers can report a lost person with dementia and establish communication channels with the community who may have found his/her loved ones. Finder can provide instant information of the lost person to the caregiver by raising sightings and are informed of the nearest safe-return point for them to bring the dementia patients to if they have found him/her. Compared with the existing solutions leveraging on social media e.g. Facebook or traditional announcements, e.g. putting up posters, the solution is less dependent on the social network of the caregiver or the manual efforts that they may put in.

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