Goa University, Goa - India

GIAN
GLOBAL INITIATIVE ON ACADEMIC NETWORK

A COURSE ON
COMPUTATIONAL SERVICE SCIENCE
11th February, 2017 to 18th February, 2018
15 Hours - 1 Credit

Overview

Service science has emerged as a significant locus of inquiry in the recent past, driven both by the growth in the services sector of the global economy and a growing realization of the criticality of the principled design and management of enterprise functionality. A service represents a unit of functionality that can be outsourced (to entities external or internal to the enterprise) and serves as an important unit of analysis for the ideation, design, implementation, deployment and maintenance of complex business operations. Service science views human-mediated services and computational services as part of a seamless continuum.

Service science brings to bear a range of areas of scholarship, from disciplines as diverse as the social sciences, industrial engineering and mathematics to understanding services. Arguably, computation sits at the core of these different bodies of knowledge. This course will address the computational core of service science.

A greater appreciation of computational service science is both timely and significant for Indian academia and industry. The service outsourcing sector of the Indian economy stands to benefit significantly from the innovations that could follow. Service delivery could be simulated and optimized, leading to (for instance) reductions in bench-time for IT workforces and optimal sizing of service delivery teams. Innovative new services could be offered, such as data science services that leverage the vast amounts of data available to the services sector. The Indian IT sector will also be able to leverage the computational innovations that this area of inquiry could generate, such as the use of artificial intelligence techniques to enable flexible, knowledge-driven business process execution.

This course will draw together concepts from service modelling and design, business process management, data science, distributed systems, knowledge representation and reasoning, socio-technical systems, gamification and human computation.

Objectives

The key objectives of this course will be to deliver the following:

• A thorough understanding of the conceptual and mathematical underpinnings of computational service science

• An introduction to a range of industry standards (service and process modelling, orchestration, choreography, decision modelling etc.)

• An appreciation of some of the available computational toolkits

• An introduction to current research trends, including data analytics in service science, socio- technical service systems and knowledge-driven adaptive service management

SESSION OUTLINE

Module 1: Service modelling
Date:11th February, 2017(2.30 to 5 pm)
Mathematical foundations of service and process modelling, workflow nets, process algebras, service description languages and standards, process modelling standards including BPMN 2.0

Module 2: Process execution, orchestration, choreography and compliance
Date:13th February, 2017(2.30 to 5 pm)
Process execution languages, orchestration and choreography specifications, computational models for service systems, business process compliance monitoring and resolution

Module 3: Service provisioning
Date:14th February, 2017(2.30 to 5 pm)
Resource modelling, modelling service contexts, techniques for optimal service provisioning

Module 4: Knowledge-driven service management
Date:15th February, 2017 (Mid-session Quiz) (2.30 to 5 pm)
Service and process adaptation, semantic and constraint-based enhancements to service models, semantic service monitoring and conformance, service variability management, computing real-time adaptations, adaptive case management

Module 5: Data analytics in service science
Date:16th February, 2017(2.30 to 5 pm)
Process discovery and mining, data-driven techniques for service provisioning and variability management, data-driven acquisition of process semantics

Module 6: Socio-technical service systems
Date:17th February, 2017(2.30 to 5 pm)
Decision modelling, socio-technical process management, human computation, gamified service execution

Examination – Date: 18th February, 2017 (10 to 12 noon)
Written Final Exam & Term Project submission

Evaluation scheme : Term Project, Mid-session Quiz & Final exam
Number of participants for the course will be limited to Sixty. (40 students+ 20 public)

You Should Attend If you are ...

• Executives, engineers and researchers from IT & Business Industry and government organizations including R&D laboratories.

• Student - students at all levels (BTech/MCA/MSc/MTech/PhD) or Faculty from academic institutions and technical institutions.

Pre-requisites:
The following categories of attendees will satisfy course prerequisites:
1. Any student with undergraduate qualifications in computer science, information systems or industrial engineering. High-performing senior undergraduate students in these disciplines may also be admitted to the course on a case-by-case basis.
2. For those who do not meet the above criteria, but have an undergraduate qualification in any of the disciplines above and additionally can establish knowledge of the following:
   • Programming
   • Software engineering
   • Some exposure or appreciation of data mining
Some exposure or appreciation of optimization techniques

FEES

The participation fees for taking the course is as follows:
Participants from abroad : US $200 Industry/ Research Organizations: Rs 15000
Academic Institutions: Rs 5000
The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with guesthouse accommodation on payment basis on request.

Faculty : Prof. Aditya Ghose

The Faculty is Director of the Decision Systems Lab in the School of Computing and Information Technology at the University of Wollongong and President of the Service Science Society of Australia. He is a past Vice-President of the apex body for computing academics in Australia and New Zealand (CORE) and a current member of its Executive. Prof. Ghose is a Fellow of the Institution of Engineers (Australia). His research interests include service science, business process management, enterprise analytics, agent technology, constraint programming and knowledge representation. Professor Ghose holds PhD and MSc degrees in Computing Science from the University of Alberta, Canada (he also spent parts of his PhD candidature at the Beckman Institute, University of Illinois at Urbana Champaign and the University of Tokyo) and a Bachelor of Engineering degree in Computer Science and Engineering from Jadavpur University, Kolkata, India. While at the University of Alberta, he received the Jeffrey Sampson Memorial Award. His research has been funded by the Australian Research Council (Chief Investigator on 8 ARC Discovery and Linkage Projects), the Canadian Natural Sciences and Engineering Research Council, the Japanese Institute for Advanced Information Technology (AITEC) and various Australian government agencies as well as companies such as Bluescope Steel, CSC and Pillar Administration. He also works closely with several other global IT majors (including IBM Research and Infosys Labs). He has won several best paper awards including, most recently, the 2015 ACM SIGSOFT Distinguished Paper Award at the MSR conference. He is a senior technical advisor to several companies in the areas of constraint programming and business process management, both in Australia and Canada. He serves as assessor (Ozreader) for the Australian Research Council and as an external reviewer for the research funding agencies of Canada, Israel, Austria, the Netherlands, Ireland and South Africa. He has been a keynote speaker at several conferences and served as Program/General Chair for several others (including ICSOC, EDOC and PRIMA).

Ramrao Wagh is an Associate Professor at Department of Computer Science and Technology, Goa University, Goa, India. His teaching &research interest is Software Engineering, OO Paradigm, Agile &Lean Methods & Educational Technology, Enterprise Systems.

Prof Venkatesh Kamat is Professor and Head, Department of Computer Science & Technology,Goa University, Goa, India. His teaching &research interest is Software Engineering, OO Paradigm, Graphics, CAD/CAM, Robotics & Educational Technology.

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