北海道大学シラバス						

■■ 科目名

Software Defined Networks

■■ 講義題目

■■ 責任教員（所属）

宮永　喜一 (大学院情報科学研究院)

■■ 担当教員（所属）

宮永　喜一 (大学院情報科学研究院)
Xiaojing Huang (シドニー工科大学)
Mehran Abolhasan (シドニー工科大学)
Justin Lipman (シドニー工科大学)

■■ 科目種別	情報科学院専門科目			■■ 他学部履修等の可否		可
■■ 開講年度	2019	■■ 期間	１学期	■■ 時間割番号		215606
■■ 授業形態	講義	■■ 単位数	1	■■ 対象年次		〜
■■ 対象学科・クラス				■■ 補足事項		
■■ ナンバリングコード						
■■ 大分類コード		■■ 大分類名称				
■■ レベルコード		■■ レベル				
5		大学院（修士・専門職）専門科目（基礎的な内容の科目）、大学院共通授業科目				
■■ 中分類コード		■■ 中分類名称				
■■ 小分類コード		■■ 小分類名称				
■■ 言語						
英語で行う授業						

■■ キーワード

Network, Communications, Software, Hardware, Protocol

■■ 授業の目標

The rapid rise in Internet traffic and services introduced a tremendous amount of pressure on telecommunication network providers. The rate of progress in Network technologies has been recognized as slow to keep up with the emerging data demands. Consequently, both industry and academia have been working on new solutions for networking technologies, which can provide long terms scalability and extensibility. Software Defined Networking (SDN) is a new framework, which is believed to be the answer to the above need. SDN has already made an impact in Data centres and enterprise networks and it is seen as a key technology to improve performance and extensibility both at core and access side of networking technologies. Consequently, there is a significant demand from the Industry for network engineers with SDN skills. This subject will introduce students to SDN and programming SDN applications. Student will learn the major concepts in SDN, Network Function Virtualisation (NFV) and learn the tools needed to develop applications over leading SDN controller (RYU).

■ 到達目標

This course aims at students' understanding of several network architectures of wide area network, local area network, personal area network such as smart-phones and digital home appliances. It is expected for the students to obtain basic knowledge for creating novel applications, systems, and services over new networks.

■ 授業計画

Lecture 1: Introduction to SDN
Lecture 2: SDN Architecture, SDN Controllers and Switches
Lecture 3: Introduction to Mininet
Lecture 4: Introduction to OpenFlow
Lecture 5: Zodiac OpenFlow Switch
Lecture 6: Data Centre Concepts, Cloud Computing, and Network Function Virtualisation
Lecture 7: SDN and NFV Applications
Lecture 8: SDN Slicing and Future of SDN

■ 準備学習(予習・復習)等の内容と分量

It is required for students to make enough preparation and review before and after each lecture. For each lecture, 90 min preparation and 90 min review are required.
Lecture materials are available on the e-Leaning of Hokkaido University.

■ 成績評価の基準と方法

Students whose attendance rate is less than 70% cannot get any evaluation. Evaluation is based on the term report (90%) and the lecture participation (10%). By the term report, students' deep understanding of a specific technology and presentation skills are evaluated. The evaluation is based on 5 grades. The ratio of S is not greater than 15% of registered students. The ratio of S and A is not greater 50% of registered students.

■ テキスト・教科書

References will be introduced in the lecture.

■ 講義指定図書

■ 参照ホームページ

This course will be provided as part of the Hokkaido Summer Institute.
For more information (invited lecturers, course details, etc.), please visit the website below:
https://hokkaidosummerinstitute.oia.hokudai.ac.jp/courses/CourseDetail=G105

■ 研究室のホームページ

https://csw.ist.hokudai.ac.jp/

■ 備考

Related Course (HSI)
Mandatory Course (Course required to be taken together with this course): Blockchain
Recommended Course (Course highly recommended to be taken together with this course): Cyber Security

■ 更新日時

2019/02/04 10:48:42

Hokkaido University Syllabus					
■ Course Title					
Software Defined Networks					
■ Subtitle					
■ Instructor (Institution)					
Yoshikazu MIYANAGA (Faculty of Information Science and Technology)					
■ Other Instructors (Institution)					
Yoshikazu MIYANAGA (Faculty of Information Science and Technology) Xiaojing Huang Mehran Abolhasan Justin Lipman					
■ Course Type			■ Open To Other Faculties / Schools		OK
■ Year	2019	■ Semester	1st Semester	■ Course Number	215606
■ Type of Class	Lecture	■ Number of Credits	1	■ Year of Eligible Students	～
■ Eligible Department / Class			■ Other Information		
■ Numbering Code					
■ Major Category Code	■ Major Category Title				
■ Level Code	■ Level				
5	Specialized Subjects (basics) in graduate level (Master's Course and Professional Course), Inter-Graduate School Classes				
■ Middle Category Code	■ Middle Category Title				
■ Small Category Code	■ Small Category Title				
■ Language Type					
Classes are in English.					

■ Key Words

Network, Communications, Software, Hardware, Protocol

■ Course Objectives

The rapid rise in Internet traffic and services introduced a tremendous amount of pressure on telecommunication network providers. The rate of progress in Network technologies has been recognized as slow to keep up with the emerging data demands. Consequently, both industry and academia have been working on new solutions for networking technologies, which can provide long terms scalability and extensibility. Software Defined Networking (SDN) is a new framework, which is believed to be the answer to the above need. SDN has already made an impact in Data centres and enterprise networks and it is seen as a key technology to improve performance and extensibility both at core and access side of networking technologies. Consequently, there is a significant demand from the Industry for network engineers with SDN skills. This subject will introduce students to SDN and programming SDN applications. Student will learn the major concepts in SDN, Network Function Virtualisation (NFV) and learn the tools needed to develop applications over leading SDN controller (RYU).

Course Goals

This course aims at students' understanding of several network architectures of wide area network, local area network, personal area network such as smart-phones and digital home appliances. It is expected for the students to obtain basic knowledge for creating novel applications, systems, and services over new networks.

Course Schedule

Lecture 1: Introduction to SDN
Lecture 2: SDN Architecture, SDN Controllers and Switches
Lecture 3: Introduction to Mininet
Lecture 4: Introduction to OpenFlow
Lecture 5: Zodiac OpenFlow Switch
Lecture 6: Data Centre Concepts, Cloud Computing, and Network Function Virtualisation
Lecture 7: SDN and NFV Applications
Lecture 8: SDN Slicing and Future of SDN

Homework

It is required for students to make enough preparation and review before and after each lecture. For each lecture, 90 min preparation and 90 min review are required.
Lecture materials are available on the e-Leaning of Hokkaido University.

Grading System

Students whose attendance rate is less than 70% cannot get any evaluation. Evaluation is based on the term report (90%) and the lecture participation (10%). By the term report, students' deep understanding of a specific technology and presentation skills are evaluated. The evaluation is based on 5 grades. The ratio of S is not greater than 15% of registered students. The ratio of S and A is not greater 50% of registered students.

Textbooks

References will be introduced in the lecture.

Reading List

Websites

This course will be provided as part of the Hokkaido Summer Institute.
For more information (invited lecturers, course details, etc.), please visit the website below:
https://hokkaidosummerinstitute.oia.hokudai.ac.jp/courses/CourseDetail=G105

Website of Laboratory

https://csw.ist.hokudai.ac.jp/

Additional Information

Related Course (HSI)
Mandatory Course (Course required to be taken together with this course): Blockchain
Recommended Course (Course highly recommended to be taken together with this course): Cyber Security

Update

2019/02/04 10:48:43