CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

http://www.cit.ie

Research Practice & Ethics

COMP9011

Mubashir Husain Rehmani

Mubashir.Rehmani@cit.ie

Delivered To

MSc Software Architecture and Design

MSc Artificial Intelligence

MSc Information Design and Development

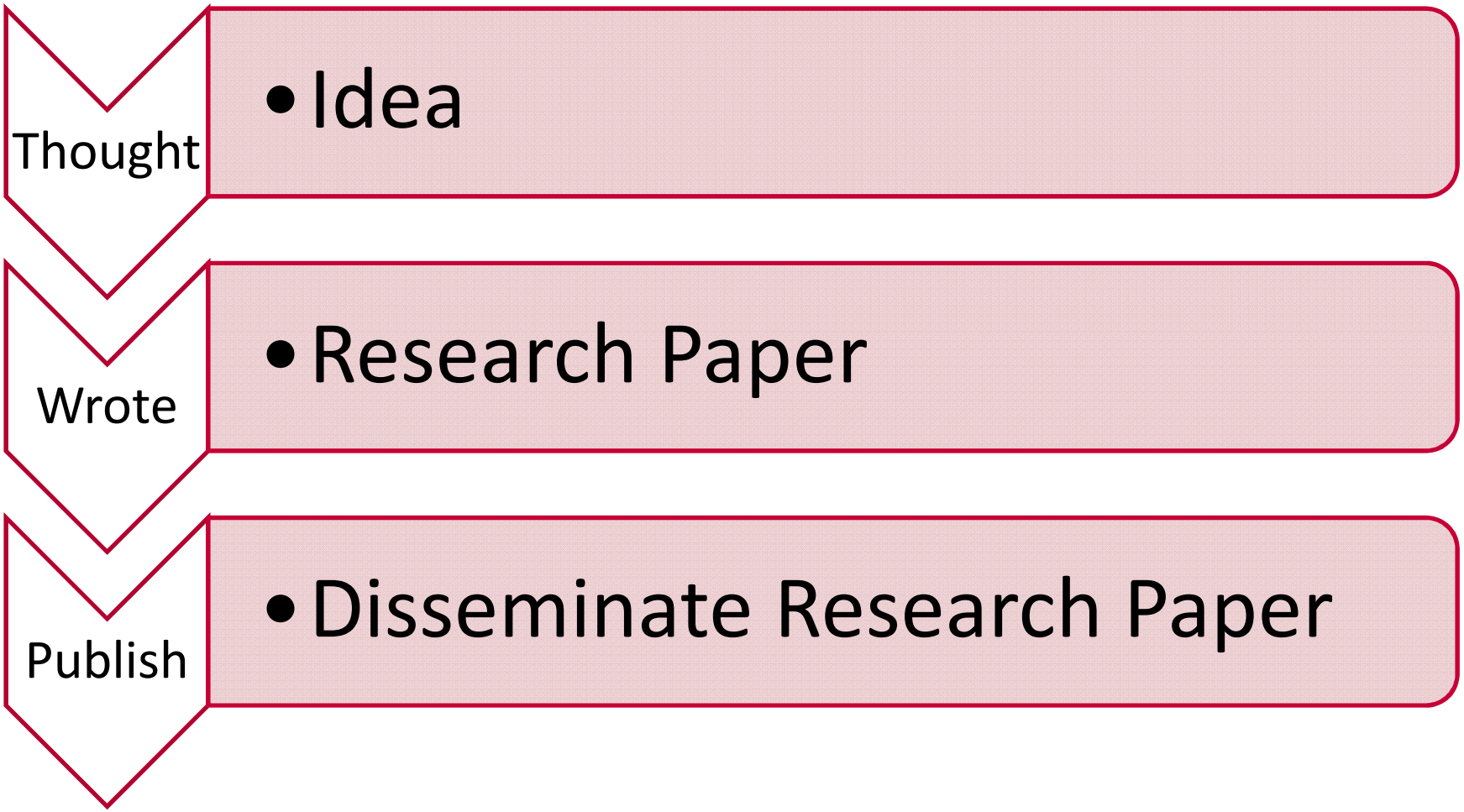
Week 3

- **Profile of a Researcher**
- **Scientific Publication Process (Peer Review)**
- **Types of Scientific Publications (Examples)**
- **Ethics in Scientific Publications**

Profile of a Researcher

- Google Scholar Profile
- Personal Webpage (Google Sites or University Webpage)
- LinkedIn Profile
- Twitter Profile
- DBLP
- ResearchGate
- Mendeley
- ORCID
- ResearcherID
- Publons
- Thomson Reuters Web of Knowledge (Science)

A Short Life Cycle of Scientific Invention



Peer Review

- Peer review is the evaluation of work by one or more people with similar competences as the producers of the work (peers).
  - Source: https://en.wikipedia.org/wiki/Peer_review
- Peer review is vital to the quality of published research. Your submitted article will be evaluated by at least two independent reviewers. Feedback from the peer reviewers will contribute to the editor's decision on whether to accept or reject your article for publication.

Peer Review – IEEE Perspective

- Peer review is defined as the "critical assessment of manuscripts submitted to journals by experts who are not part of the editorial staff." Ninety-one percent of authors think that peer review improved the quality of their article (Sense About Science Peer Review Survey). Peer review ensures the integrity of science by excluding invalid or low-quality research.
- The most common types of peer review are single-blind and double-blind review.
- In single-blind, the names of the reviewers are not shared with the author but the reviewers are aware of the author's identity.
- In double-blind, neither the author nor the reviewers are aware of each other's identity.

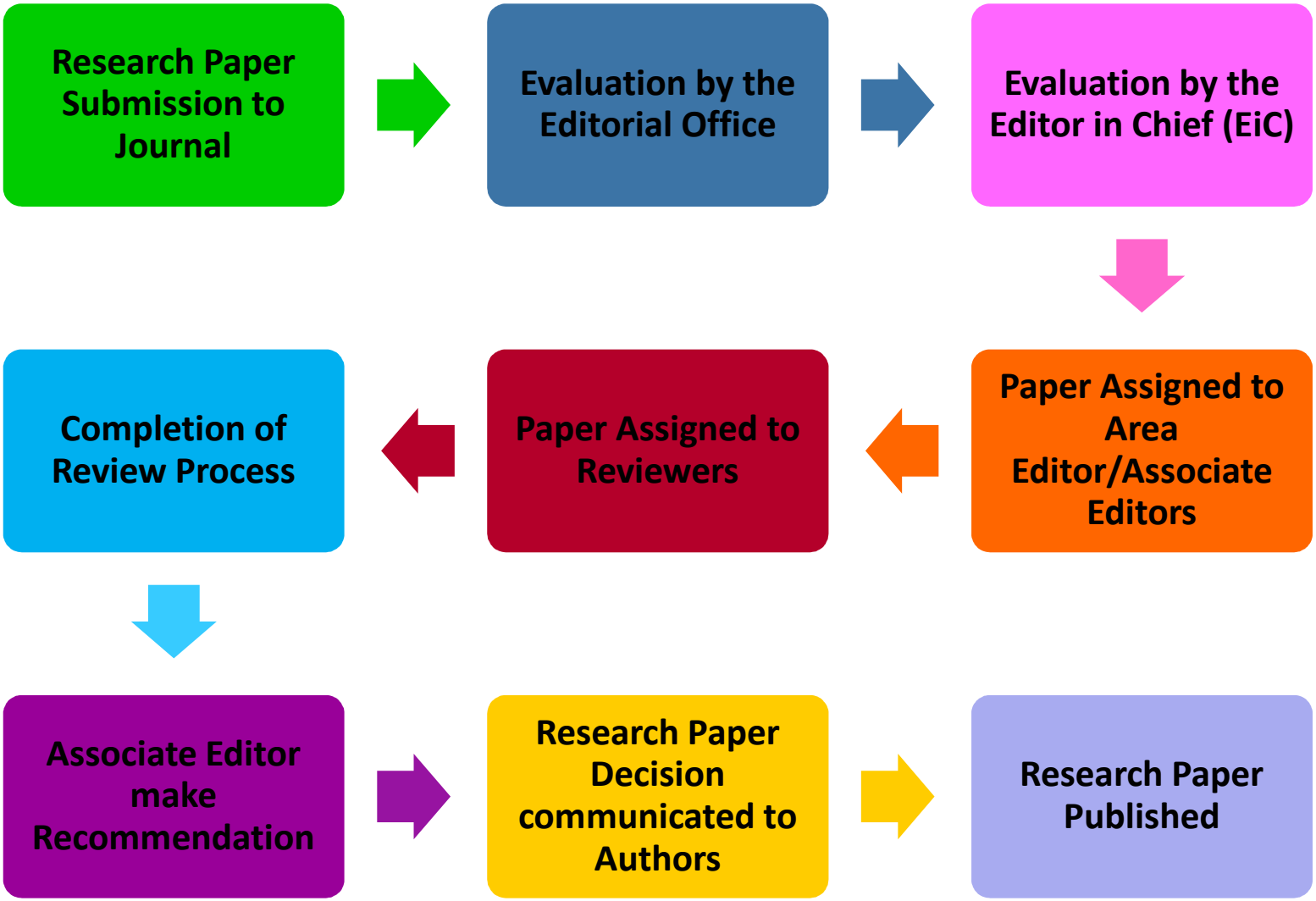
What Are Editors and Reviewers Looking For?

During the peer review process, editors, and reviewers look for:

- Scope: Is the article appropriate for this publication?
- Novelty: Is this original material distinct from previous publications?
- Validity: Is the study well designed and executed?
- Data: Are the data reported, analyzed, and interpreted correctly?
- Clarity: Are the ideas expressed clearly, concisely, and logically?
- Compliance: Are all ethical and journal requirements met?
- Advancement: Is this a significant contribution to the field?

Source: https://journals.ieeeauthorcenter.ieee.org/submit-your-article-for-peer-review/about-the-peer-review-process/

Peer Review Process



Books

- Types of Books
  - Edited Books
  - Authored Books
  - Springer Brief Series
- Famous Publishers
  - Wiley
  - Cambridge University Press
  - IEEE
  - CRC Press
  - Taylor and Francis
  - IGI Global

Scientific Publishers

- IEEE
- Elsevier
- Springer
- Wiley
- Inderscience
- ACM
- Taylor and Francis
- Hindawi

Patent

https://patents.google.com/patent/US9838760

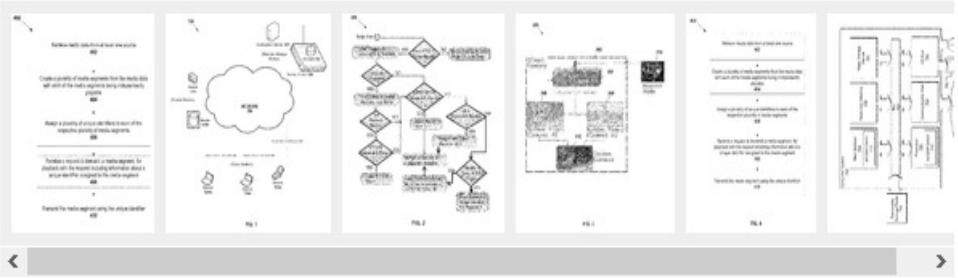
Google Patents

Systems and methods for name-based segmented media acquisition and distribution framework on a network

Abstract

A media network platform is disclosed. The media network platform utilizes a computing device comprising at least one memory for storing instructions that are executed by at least one processor. Media data is retrieved from at least one data source. A plurality of media segments are created from the media data with each of the media segments being independently playable. A plurality of unique identifiers is assigned to each of the respective media segments. A request is received to transmit a media segment of the plurality of media segments for playback with the request including information about a unique identifier assigned to the media segment. The media segment is transmitted using the unique identifier. The media segment comprises a portion of a video derived from the media data and comprises any specific time interval of the video.

Images (6)



US9838760B2

US Grant

Download PDF | Find Prior Art | Similar

Inventor: Adolph Seema, Martin Reisslein

Current Assignee : Arizona State University

Original Assignee: Arizona State University

Priority date : 2014-12-16

Family: US (1)

Date	App/Pub Number	Status
2015-12-07	US14961706	Active
2016-06-16	US20160173959A1	Application
2017-12-05	US9838760B2	Grant

Survey Article

Full-Duplex Communication in Cognitive Radio Networks: A Survey

Muhammad Amjad, Fayaz Akhtar, Mubashir Husain Rehmani, *Senior Member, IEEE*, Martin Reisslein, *Fellow, IEEE*, and Tariq Umer, *Senior Member, IEEE*

***Abstract*—Wireless networks with their ubiquitous applications have become an indispensable part of our daily lives. Wireless networks demand more and more spectral resources to support the ever increasing numbers of users. According to network engineers, the current spectrum crunch can be addressed with the introduction of cognitive radio networks (CRNs). In half-duplex (HD) CRNs, the secondary users (SUs) can either only sense the spectrum or transmit at a given time. This HD operation limits the SU throughput, because the SUs cannot transmit during the spectrum sensing. However, with the advances in self-interference suppression (SIS), full-duplex (FD) CRNs allow for simultaneous spectrum sensing and transmission on a given channel. This FD operation increases the throughput and reduces collisions as compared with HD-CRNs. In this paper, we present a comprehensive survey of FD-CRN communications. We cover the supporting network architectures and the various transmit and receive antenna designs. We classify the different SIS approaches in FD-CRNs. We survey the spectrum sensing approaches and security requirements for FD-CRNs. We also survey major advances in FD medium access control protocols as well as open issues, challenges, and future research directions to support the FD operation in CRNs.**

***Index Terms*—Cognitive radio network (CRN), full-duplex (FD) communication, spectrum sensing, self-interference suppression (SIS).**

I. Introduction

THE ADVANCES in information and communications technologies over the past decade have enabled seamless connectivity among several entities and electronic devices. This exceptional growth has motivated the development of next generation wireless technologies, such as femtocells [2], [3], exploitation of millimeter wave spectrum [4], multiple-input multiple-output (MIMO) systems [5], [6], and dynamic spectrum sharing using cognitive radio (CR) [7]–[9].

A. Motivation: Need for Full-Duplex Communication in CRN

The rapid proliferation of wireless devices and data traffic has spurred the misconception that the wireless spectrum is becoming a scarce commodity. Spectrum usage analyses have revealed that large portions of the spectrum are not efficiently utilized [10]. Cognitive radio (CR) has garnered significant attention from academia and industry as a promising technique for enhancing the efficiency of spectrum utilization. CR replaces the inefficient traditional static spectrum management policies with dynamic spectrum access strategies. The dynamic spectrum access strategies allow for the opportunistic exploitation of the white spaces [11], [12], i.e., the unused or underutilized spectral resources.

Similar to traditional wireless networks, most existing CR networks (CRNs) employ half-duplex (HD) radios for the exploitation of white spaces. These HD-CR devices have two critical drawbacks. First, HD-CRN devices cannot simultaneously sense and access the spectrum. Hence, they typically employ a time-slotted two-stage white space exploitation process. This process senses the spectrum in the first stage and

Technical Article

Computer Communications 36 (2013) 1172–1185

Contents lists available at SciVerse ScienceDirect

Computer Communications

journal homepage: www.elsevier.com/locate/comcom

SURF: A distributed channel selection strategy for data dissemination in multi-hop cognitive radio networks

Mubashir Husain Rehmani [a,*], Aline Carneiro Viana [b], Hicham Khalife [c], Serge Fdida [a]

[a] Université Pierre et Marie Curie (UPMC) – Sorbonne Universités, 4, Place Jussieu, 75005 Paris, France
[b] INRIA, Saclay - Ile de France, 1 rue Honoré d'Estienne d'Orves, Campus de l'École Polytechnique, 91120 Palaiseau, France
[c] Thales Communications and Security, Colombes, France

ARTICLE INFO

Article history:
Received 21 February 2013
Received in revised form 18 March 2013
Accepted 21 March 2013
Available online 1 April 2013

Keywords:
Multi-hop cognitive radio networks
Channel selection
Data dissemination

ABSTRACT

In this paper, we propose an intelligent and distributed channel selection strategy for efficient data dissemination in multi-hop cognitive radio network. Our strategy, SURF, classifies the available channels and uses them efficiently to increase data dissemination reliability in multi-hop cognitive radio networks. The classification is done on the basis of primary radio unoccupancy and of the number of cognitive radio neighbors using the channels. Through extensive NS-2 simulations, we study the performance of SURF compared to four related approaches. Simulation results confirm that our approach is effective in selecting the best channels for efficient communication (in terms of less primary radio interference) and for highest dissemination reachability in multi-hop cognitive radio networks.

1. Introduction

Data dissemination is commonly defined as the spreading of information to multiple destinations through broadcasting. The main objective is to reach the maximum number of neighbors with every sent packet. In this communication scheme, no rout-

(3) inefficiency in spectrum usage. Therefore, cognitive radio networks are designed to opportunistically exploit the underutilized spectrum. Moreover, the regulatory bodies, such as, the Federal Communication Commission (FCC) [2] also promoted the idea of using the cognitive radio devices to address the spectrum shortage problem. In this regard, the FCC has designed an inter-

Magazine Article

TOPICS IN NETWORK AND SERVICE MANAGEMENT

Network Virtualization: State of the Art and Research Challenges

N. M. Mosharaf Kabir Chowdhury and Raouf Boutaba, University of Waterloo

ABSTRACT

Recently network virtualization has been pushed forward by its proponents as a long-term solution to the gradual ossification problem faced by the existing Internet and proposed to be an integral part of the next-generation networking paradigm. By allowing multiple heterogeneous network architectures to cohabit on a shared physical substrate, network virtualization provides flexibility, promotes diversity, and promises security and increased manageability. However, many technical issues stand in the way of its successful realization. This article investigates the past and the state of the art in network virtualization along with the future challenges that must be addressed to realize a viable network virtualization environment.

INTRODUCTION

In recent years, the concept of network virtualization has attracted significant attention in the debate on how to model the next-generation networking paradigm that can replace the existing Internet. Architectural purists view network virtualization as a tool for evaluating new architectures, whereas pluralists conceive virtualization reference business model and a conceptual architecture of a network virtualization environment (NVE) are presented, identifying the characteristics and critical design factors to materialize it. Following this, a number of past and present research projects on network virtualization and related concepts are summarized. Finally, a detailed study of the key issues is presented emphasizing open research challenges with an objective to stoke wide interest among researchers in this field.

HISTORICAL PERSPECTIVE

The concept of multiple coexisting logical networks has appeared in the networking literature several times in the past, and can be categorized into four main classes: VLANs, VPNs, active and programmable networks, and overlay networks.

VIRTUAL LOCAL AREA NETWORK

A VLAN is a group of logically networked hosts with a single broadcast domain regardless of their physical connectivity. All frames in a VLAN bear a VLAN ID in the medium access control (MAC) header, and VLAN-enabled switches use both the destination MAC address and VLAN

Editorial

Guest Editorial
Special Section on Smart Grid and Renewable Energy Resources: Information and Communication Technologies With Industry Perspective

THE successful integration of renewable energy into the power grid is expected to reduce the dependence of the grid on the fossil fuels. The potential renewable energy resources include light, wind, vibration, heat, biofuel, biomass, and tides [1], [2]. It is envisaged that the use of renewable energy will reduce the use of traditional energy resources, such as nuclear, oil, and gas, in the future and this trend will continue in order to reduce the emission of greenhouse gases. The abundance of these renewable distributed energy resources (DERs) at the consumer side may help to develop distributed renewable energy generation at a large scale [3]. The DERs will likely be an integral part of the future electric grid, i.e., the smart grid [4]–[6]. A prominent feature of the smart grid is that it allows for two-way communication between the utility and its customers through information and communication technologies (ICTs) [7].

For this special section of the IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, we received 67 article submissions. After a detailed and rigorous peer-review process, we have included 19 original and unpublished articles in this special section in the domain of ICTs with an industry perspective for smart grid systems with emphasis on the integration of renewable energy resources. Therefore, this special section focuses on recent de-

Thus, the SG needs to ensure security and privacy aware data communication. The article "Toward Delay-Tolerant Flexible Data Access Control for Smart Grid with Renewable Energy Resources" by Z. Guan *et al.* addresses such data security requirements. Based on key policy attribute-based encryption, the authors propose a delay-tolerant data access control scheme for SG communication. The proposed scheme not only reduces the time needed for decryption, but also generates less overhead compared with traditional schemes. Moreover, the proposed scheme is distributed in nature and does not rely on a central trusted server for encryption/decryption.

The article "Secure Three-Factor User Authentication Scheme for Renewable-Energy-Based Smart Grid Environment" by M. Wazid *et al.* proposes a user authentication scheme called TUAS-RESG. The proposed authentication scheme shows robustness against various well-known attacks by using one-way hash functions, elliptic curve cryptography, and bitwise XOR operations. The effectiveness of TUAS-RESG is demonstrated through NS-2-based simulations.

An adversary can profile the activities and habits of subscribers by using available tools of nonintrusive load monitoring techniques on the smart meters or may even modify the metered

Newsletter

https://internetinitiative.ieee.org/newsletter/march-2018/managing-next-generation-internet-issues-and-p

Managing Next Generation Internet: Issues and Prospects

By Fayaz Akhtar, Mubashir Husain Rehmani, and Alan Davy
Telecommunications Software and Systems Group (TSSG), Waterford Institute of Technology, Waterford, Ireland

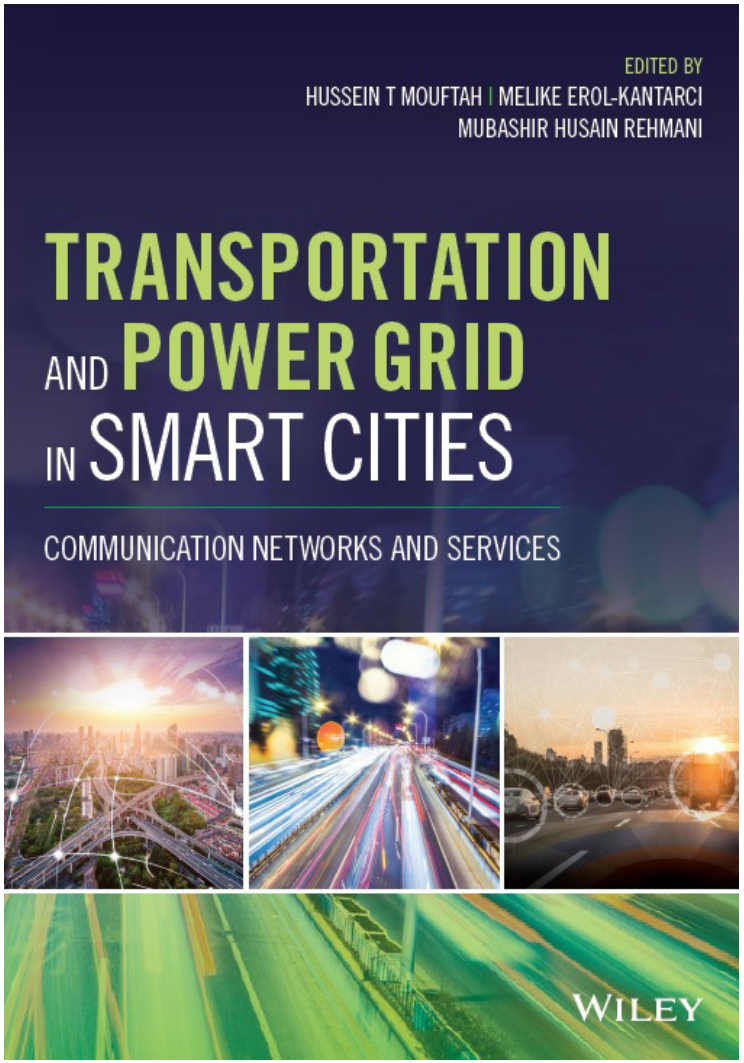
IEEE Internet Policy Newsletter, March 2018

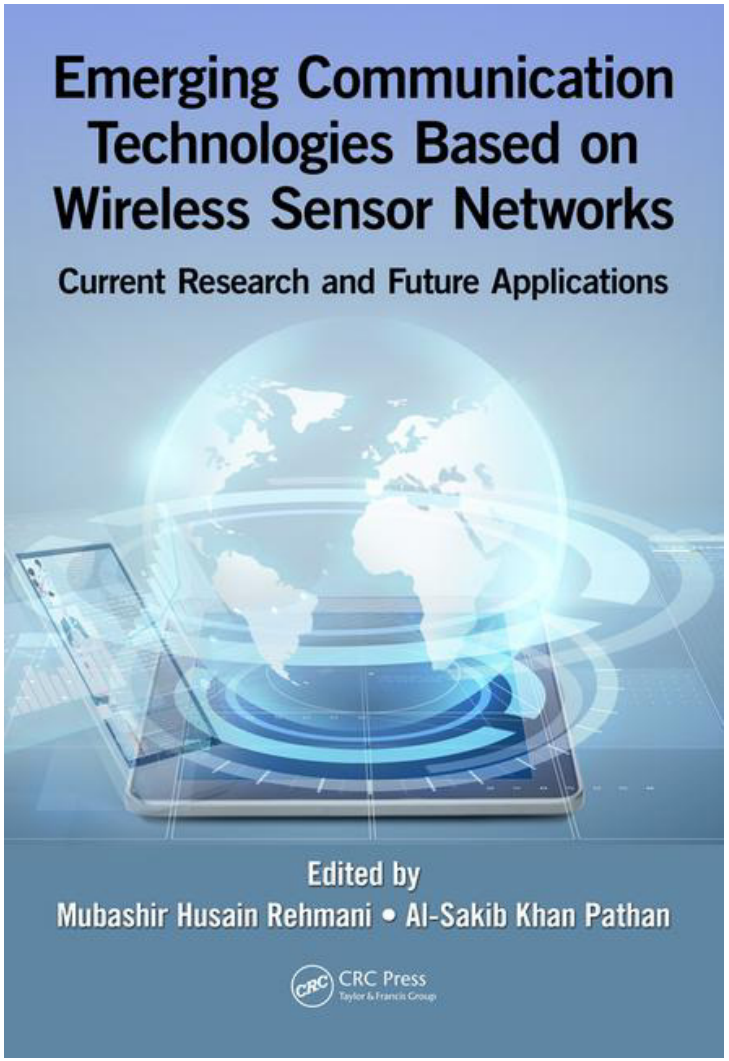
Discuss this topic on Collabratec:

IEEE Collabratec

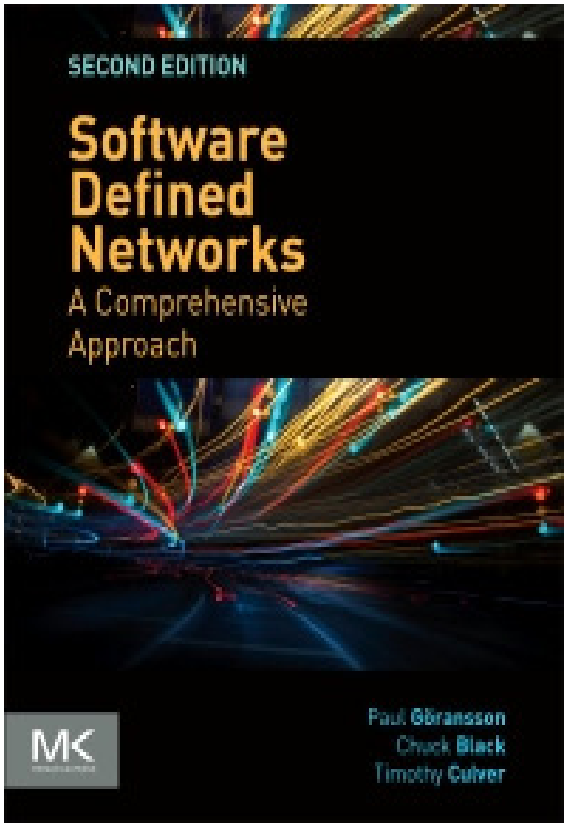
Next Generation Internet (NGI) is set to revolutionize our day-to-day lives, especially the way we communicate and interact with the environment. The modern internet has already evolved from a simple two-node experimental interconnection to an enormous commercial network composed of rapidly increasing nodes as well as various end-user applications. While the initial Internet Protocol (IP)-based connectivity among trusted hosts fulfilled the required expectations of a host-to-host communication model, the plethora of emerging network services and the progressing demands for contents have exposed the internet's inherent limitations. These constraints include onsite manual configuration, lack of topological view, complicated management, and static performance models that are typically based on host-centric communication rather than content distribution[1]. In fact current networks based on static topologies already pose severe drawbacks in terms of their expansion. As a way to deal with some of the inefficiencies derived from these drawbacks, the industry and academia alike have advocated for the adoption of novel NGI architectures and paradigms, such as software-defined networking (SDN), network virtualization (NV), and information-centric networking (ICN). This prompts the question that if the underlying heterogeneous technologies, architectures, and services that would compose the future internet are dramatically shifting from existing trends, what will be the network management implications? And how would timely dissemination of management data be ensured among these diverse communication paradigms?

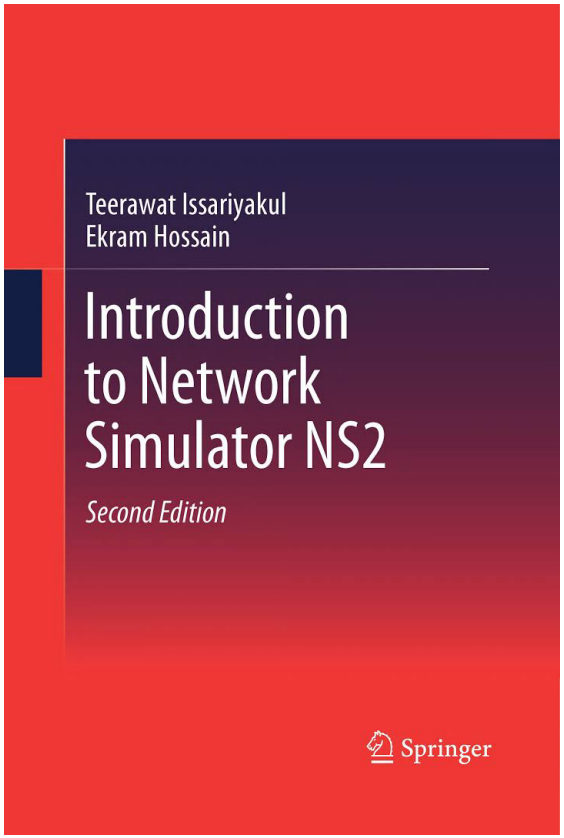
Edited Books

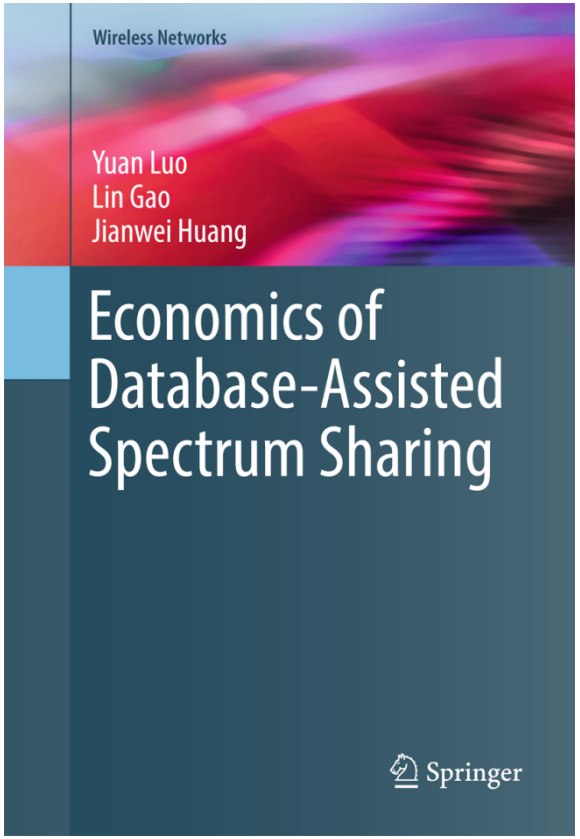




Authored Books







Citations

- A citation is a reference to a published or unpublished source
- Way to see how much well referenced the published work is
- To attract funding
- Show the visibility and recognition of work

Prof. Muriel Medard Citations (Google Scholar) = 33,036

Impact Factor (IF)

- The impact factor (IF) or journal impact factor (JIF) of an academic journal is a measure reflecting the yearly average number of citations to recent articles published in that journal

- Calculated by Thomson Reuters
  - Annually
  - Shows the reputation of the scientific publication

H-Index and I-10 Index

- H-index is the largest number h such that h publications have atleast h citations.

- I-10 index is the number of publications with atleast 10 citations.

Prof. Muriel Medard H-Index= 74
Prof. Muriel Medard I-10 Index = 336

Few Famous Conferences

- ACM MobiCom
- ACM MobiHoc
- IEEE Infocom
- SIGCOM
- IEEE GlobeCom
- IEEE ICC
- IEEE PIMRC
- IEEE NDSS
- USENIX
- IEEE WoWMoM