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EDUCATION

2014 - July 2016 **Islamic Azad University, Science and Research Branch, Tehran, Iran**
M.A in Computer Engineering- Software
Grade: 19.5 / 20

Advisor: Asad Vakili, Ph.D.

Master's Thesis: "Adaptive forwarding based on interface ranking and Name Label switching in NDN"

Short Description:

Named Data Networking (NDN) is a newly proposed new Internet architecture, that uses naming data instead of locations and cause important changes on network service abstraction from "delivering packets to given destinations" to "retrieving data by specified names." This fundamental change creates a new opportunities as well as many intellectual challenges in all parts especially, network routing and forwarding, communication security and privacy. The focus of this dissertation is forwarding plane feature introduced by NDN. Communication in NDN is done by exchanges of Interest and Data packets. Consumers send Interest packets to request intended data, routers forward them based on data prefix names, and producers answer with Data packets, Exactly the same way that interest was receive. During this process, routers maintain state information of pending Interests. Since NDN is still in its early stage none of these powerful features performance, in data retrieval and explore multiple forwarding paths, has been systematically designed, evaluated or explored. This paper, combining label switching, (the same networks MPLS), with adaptive forwarding method, has tried to improve forwarding performance., For this purpose in addition to RTT, uses other timer is called T, that is a RTT coefficient for interface ranking. And by using BDP chooses the best interface to respond the interest. During this process response time, throughput, data retrieval time are improved, 12%, 10% and 5% respectively.

2011 – June 2012 **Islamic Azad University, Saveh, Iran**

B.s in Computer Engineering (Software major)**Grade: 20 / 20**

Bachelor's Thesis: "Survey on Honeypot, Honey Pot Performance on the Network"

2009 – June 2011 Islamic Azad University, Saveh, Iran**Associate of Science in Computer Software****Grade: 20 / 20**

Thesis: "Designing a website as Digital Library Using HTML Language"

RESEARCH INTERESTS

- NDN Networks
- Cloud Computing
- Wireless Sensor Network
- Security IOT
- Artificial Intelligence
- NDN Security

HONORS AND AWARDS

2016	Ranked 1st in M.A with grade point average of 18.1
2014	Ranked 1st in B.A with grade point average of 18.07
2012	First rank of associate with grade point average of 17.30

Computer Skills

Programming Language	C/C++, Python
Web Programming	HTML/CSS
Simulator	Matlab , ndnsim
Type Setting	Microsoft Office, Open Office
Operating System	Windows, Linux (Ubuntu)

TEACHING EXPERIENCE

Teaching Assistant – 2017, 2018, 2019 Fakhrazi Nonprofit Institute, Saveh, Iran

The lessons taught include:

Multimedia Systems
Programming c,c++
Special Topics
Simulation

Teaching Assistant –2018, 2019 Energy University, Saveh, Iran

The lessons taught include:
Operating system
Laboratory operating the system
Software engineering
Programming c,c++

Teaching Assistant – 2017, 2018, Daneshestan Nonprofit Institute, Saveh, Iran

The lessons taught include:
Software Basics
Algorithm design
Programming c, c++

RESEARCH EXPERIENCE AND NOTABLE COURSE PROJECTS

- **Master Thesis:** Conduct Research on Provides an approach based on adaptive forwarding and label switching to improve the speed of packet forwarding in NDN networks(Routing in NDN)
- **Bachelor Thesis:** Conduct Research on Binary Packers (“Survey on Honeypot”). In this project, I worked on Dionaea Honeypot and installed on the PC Check its performance (2011-2012).
- **Associate of Science Thesis:** Designing a website for university libraries and working with HTML language. (2010).
- **Software Security:** Research on Security Software and research in this area. (2014).
- **Software Architecture Style:** Exploring a variety of software architecture styles and the functions of each of them .And conclude on the best software architecture style . (2015)

WORK EXPERIENCE

2010 – 2012 Responsibility for University Computer Network,
Work on the faculty site Installing software and network computers available on campus

2012 – 2013 Responsible for computer network at the Department of Insurance,

Network control and Take the necessary measures to secure the network

2016- Research Project on the Machine Learning

Title project: Implementation of sensor networks using smartphone for human activity recognition

Detection of human activities, attracted a lot of attention in recent years due to high demand in various application areas, has, which uses sensors to obtain time series of activities. In this research, a convolution neural network to perform efficient and effective personal human activities using smartphone sensors by exploiting the intrinsic properties and activities offered one-dimensional time-series signals, Yet the proposed solutions and provided automatically compatible with strong characteristics of the raw data is extracted. Experiments show that convolutions actually bring more relevant and complex features to each additional layer, although the differences in features with each additional layer of complexity is reduced.

2018- Research Project on the Smart Phone,

Title project: Energy Consumption Management in Opportunistic Implementation of Smart Phone Based WSN

Abstract: A wireless sensor network is composed from a set of sensor nodes that Collects information and processes them under a pre-defined Algorithms. Sensors rely on requirement can be Single-purpose (Thermal sensors) or Multi-purpose (smart phone) that consist of few sensors. The Advantage of Multi-purpose as smart phone are scalability, accessibility, and strong management panel of them. instead th disadvantage of this networks are the hardware limitation and energy Consumption of them , especially in positioning area ,a lot of researches were presented about optimization of energy Consumption the each one has own strength and weakness. Given that a large section of energy Consumption of sensor networks is related to Positioning operation of sensors .The aim of this thesis is the presentation of energy efficiency method for positioning better than previous works, based on existing sensors.In this regard, we provide a hybrid Algorithms for positioning as action/non action that base of it is Based on Momentum Change In different directions. The usage sensors for includes: Compass, accelerometer GPS receiver .The result of this research shows that using sensors for Positioning can reduce the energy Consumption in anyway, but by if the accuracy not more importance then periodic employing of sensors can reduce more energy, hence using of Positioning for routing and information transitions need a high accuracy.

PUBLICATIONS

Hadis Rezaei, Asad Vakili (2017). "Named Data Networking: Investigate of New Infrastructure for Future of Internet." *Computer Network and Information Security*, . (Accepted at 1/Sep/2017/Sep/2019. Submitted at 12/Aug/2016).

About the articles:

According to this problem that existing Internet is like a tree of physical equipment which is established to outflow in packets from each leaf to another leaf, despite having effective communication it has problems in scalability. Also the content-centric network can recognize large amount of information that is produced for first time and used after saving it. The change is using of host-to-host-centric to completely new architecture, that its design represents our understanding

of strengths and limitations of architecture of the existing Internet. In NDN applications based data and Content-centric networks, packets are retrieved according to their names instead of their source and destination addresses. This performance is for scalability, security and ease access to data. This paper discussed methods of Internet architecture based data including TDRID, DONA, Netinf, CCN, and NDN.

Hadis Rezaei, (2020), “Provides an approach based on adaptive forwarding and label switching to improve the speed of packet forwarding in NDN networks.” (In preparation)

About the articles:

Since NDN is still in its early stage none of these powerful features performance, in data retrieval and explore multiple forwarding paths, has been systematically designed, evaluated or explored .This paper, combining label switching, (the same networks MPLS), with adaptive forwarding method, has tried to improve forwarding performance., For this purpose in addition to RTT, uses other timer is called T, that is a RTT coefficient for interface ranking. And by using BDP chooses the best interface to respond the interest. During this process response time, throughput, data retrieval time are improved, 12%, 10% and 5% respectively

Mauro Conti, Eleonora Losiouk, Hadis Rezaei, (2021), Provide a method for validating data packets in NDN networks with the ability to anonymize the data producer(In preparation)

About the articles:

In this paper, we study two of such problems and propose an NDN Chord and Chaos-based signature mechanism as a possible solution. First, how is to verify the signature of a data packet without needy additional retrieval of certificates, which can be challenging, in ad hoc environments. With the proposed method consumers can verify the signature and ensure integrity and authenticity of a data packet without any additional information about producer, provided they can verify UIDsend by Key Authority (AK) .

CONFERENCES ATTENDED

- **2nd Conference on Electrical and Computer Engineering Distributed Systems and Smart Grids. Kashan,(2016)**
- **2nd Conference on Applied Electrical & Computer Engineering, Saveh,(2016)**

LANGUAGES

Persian (Farsi): Native

English: Intermediate level