

## EDUCATION

**The University of Arizona, Tucson, AZ**

Doctorate of Computer Science

Aug. 2016 – Dec. 2020

Thesis Title: *Content Distribution over Named-Data Networks*

Advisor: Prof. Beichuan Zhang Awarded Full-Tuition Scholarship

Funded by National Science Foundation (NSF)

GPA: 4.00 / 4.00

**Sharif University of Technology, Tehran, Iran**

Master of Engineering of Information Technology - Computer Networking

Aug. 2012 – Apr. 2014

Thesis Title: *Fast and Adaptive Forwarding in Named-Data Networks*

Advisor: Prof. Ali Movaghar

Awarded Full-Tuition Scholarship

GPA: 3.72 / 4.00

## RESEARCH INTERESTS

Future Internet Architecture, Information-Centric Networking, Routing and Forwarding in Wide-area Networks, Data Structure Design

## SELECT PROJECTS

### ◦ iCDN: A Content Delivery Network over Information Centric Network

Advisor: Prof. Beichuan Zhang

Design and implementation of a new CDN architecture that employs content-centric paradigm to detach the centralized application-layer routing module from the CDN architecture and natively support multicast and multipath to sharply reduce complexity and cost of the system without sacrificing the performance. This project deploys a world-wide, public CDN over the [global NDN testbed](#). Both the simulated and implemented versions of this project are written in C/C++.

### ◦ iViSA: Let NDN stream Videos!

Advisor: Prof. Beichuan Zhang

🔗 <http://ivisa.named-data.net>

Design and implementation of a zero client-side configuration, adaptive bit-rate video streaming service over NDN protocol. This project employs building blocks developed by NDN and open-source community to develop a new video streaming tool-bundle. The back-end and front-end of this service are implemented in C/C++ and JavaScript, respectively. From mid-2019, [NDN's official website](#) started using iViSA software-bundle to serve its videos to its users.

### ◦ Testbed Status Webpage

🔗 [http://ivisa.named-data.net/testbed\\_map](http://ivisa.named-data.net/testbed_map)

Deployment of a web page that plots the NDN testbed nodes on the map using Google Map API and shows basic information about the status of each node. The ultimate goal of this project is building a real-time monitoring system to track the NDN testbed for network debugging and management purposes.

### ◦ OpenICN: SDN for Content-Centric Networks

Design and implementation of a scalable SDN-based forwarding architecture. It utilizes a global view of the network to fetch data from the nearest cache. A new SDN controller (implemented in C++) cooperates with modified name-based packet forwarders through a southbound communication channel/protocol for network/cache state update, decision making, and forwarding table population. This project is mostly implemented in C++.

## WORK EXPERIENCE

**IIDtech Co., Tehran, Iran**

IT Supervisor and Technician

Feb. 2010 – Apr. 2016

- Maintained and diagnosed computer and electronic systems of Tos-eh Farda Bank (northern branches), including hardware and software, operating systems, and security equipment.
- Frequently interacted with clients to teach/help them to use installed hardware/software.

## TEACHING EXPERIENCE

**The University of Arizona, Tucson, AZ**

- Web Programming (Aug. 2016 – Dec. 2016)
- Analysis of Discrete Structures (Jan. 2017 – May. 2017)
- Operating Systems (Aug. 2020 – Dec. 2020)

**Sharif University of Technology, Tehran, Iran**

- Advanced Computer Networks (Aug. 2013 – Dec. 2013)
- Advanced Computer Networks (Jan. 2014 – May. 2014)

## SKILLS & TOOLS

**Programming Languages:** C/C++ (**strongest**), C#, Matlab, Python

**Web Programming:** React, HTML & CSS3, JavaScript, PHP

**Code Review & Version Control:** Git, Gerrit, Redmine

**Database:** Microsoft SQL Server, MongoDB, MySQL

**Simulators & Emulators:** OPNET, NS3, ndnSIM, mininet, mini-ndn, Packet Tracer

**Network & Security:** Socat, Nmap, hPing3, TCPDump, Netcat, Wireshark

**Operating Systems:** Macintosh, Windows, Linux (Ubuntu, Backtrack)

**Virtualization:** VirtualBox, VMware

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## PUBLICATION

### Published

- C. Ghasemi, H. Yousefi, K.G. Shin, B. Zhang, “*NameTrie: A Fast and Memory-Efficient Data Structure for Name-based Packet Forwarding*”, in *proceedings of 26th IEEE International Conference on Network Protocols (ICNP)*, 2018 – (acceptance rate: 17%)
  - C. Ghasemi, H. Yousefi, K.G. Shin, B. Zhang, “*Routing Meets Caching in Named Data Networks*”, in *proceedings of IEEE International Conference on Computer Communications (INFOCOM)*, 2018 (Poster)
  - C. Ghasemi, H. Yousefi, K.G. Shin, B. Zhang, “*MUCA: New Routing for Named Data Networking*”, in *proceedings of 17th IFIP Networking (NETWORKING)*, 2018 – (acceptance rate: %21)
  - C. Ghasemi, H. Yousefi, K.G. Shin, B. Zhang, “*On the Granularity of Trie-based Data Structures for Name Lookups and Updates*”, accepted by *IEEE/ACM Transactions on Networking* ( [github/chavoosh/TrieGranularity](https://github.com/chavoosh/TrieGranularity))
  - C. Ghasemi, H. Yousefi, B. Zhang, “*Far Cry: Will CDNs hear NDN’s call?*”, in *proceedings of 7th ACM Conference on Information-Centric Networking*
  - C. Ghasemi, H. Yousefi, B. Zhang, “*iCDN: An NDN-based CDN*”, in *proceedings of 7th ACM Conference on Information-Centric Networking*
  - C. Ghasemi, H. Yousefi, B. Zhang, “*Internet-Scale Video Streaming over NDN*”, accepted by *IEEE Network Magazine*, 2020
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## HONORS & AWARDS

- Galileo Scholar Award, the finest graduate award in College of Science at The University of Arizona, in 2020
  - Fellowship Award from Computer Science department at The University of Arizona, in 2019
  - Offered direct full-funded admission to the doctorate program at Sharif University of Technology in 2015
  - Ranked 3rd among all students of Information Technology Engineering-Computer Networking at Sharif University of Technology in 2014
  - Awarded direct admission to the Master’s program in IT Engineering at Sharif University of Technology in 2012
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## MORE PROJECTS

### ◦ NDN Tools & Protocols

One of the main developers and reviewers of the following NDN tools & protocols: A version discovery protocol for NDN (called **RDR**) and a tool bundle for fetching and publishing content in NDN (called **ndnchunks**). These projects are implemented in C++.

### ◦ DuDJ: A Dumb Digital Jukebox

<http://dumbjukebox.com>

A modern web-based jukebox, fully compatible with Spotify. This is a free online service that allows anyone to sign up with their Spotify account and run a simple jukebox, right away. With DuDJ, people in a Café, a wedding, or a party can be part of song selection and decide what music they want to listen to! This website is implemented by *React*.

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## MEETINGS & HACKS


### Hackathons

- 4th NDN Hackathon, *Memphis, TN*
- 5th NDN Hackathon, *Los Angeles, CA (Winner project)*
- 6th NDN Hackathon, *Miami, FL (Winner project)*
- 8th NDN Hackathon, *Los Angeles, CA*
- Hack Arizona '18, *Tucson, AZ*

### Meetings

- NDNComm '17, *Memphis, TN*
  - 9th NDN Retreat, *Los Angeles, CA*
  - 10th NDN Retreat, *Los Angeles, CA*
  - 11th NDN Retreat, *Tucson, AZ*
  - 12th NDN Retreat, *Virtual (Organizer)*
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## ASSOCIATION & MEMBERSHIP

- Peer reviewer of IEEE Networking Letters  **IEEE**
  - Chair of Activities at Graduate Students Council (GSC) (2018 - Present)
  - IEEE Member
  - IEEE Young Professionals Group
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## MUSIC & ART

**Instruments:** **Tombak (professionally)** (2001 - Present), Piano (2017 - Present), **Santur** (2007 - 2014)

**Ensembles:** Saba Orchestra, Gat Orchestra, Darvish Khan Ensemble, Tombak & Daf Ensemble

**Compositions:** **Gray**, **Childhood**, **Nothing Lasts**, **Gone**, **Galaxy**

**Composition Tools:** Pro Tools, Sibelius

**Calligraphy:** Elementary Diploma of Calligraphy from [Iranian Calligraphy Association](#) (ICA) (2013)

**Graphic Design:** Designed the logo of Arizona Bear Down Krav Maga community (2017)

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## SPORTS

- Judo (2008 - *Present*)
  - 3rd in Judo Black Belts State Championships in 2019
  - 3rd in Judo State Championships in 2012
- Krav Maga (2017 – 2018)
- Swimming (1998 - 2000)
- Badminton (1997-1999)
- Basketball ((2001-2005)