

---

## AREA OF INTEREST

Wide Area Networks - Software Defined Networking - Information-Centric Networking - Routing and Forwarding - Data Structure Design and Algorithm

---

## WORK EXPERIENCE


 | Google Cloud, Sunnyvale, CA

Software Engineer

Mar. 2021 – Now.

- Work with **Google Cloud SDN infrastructure** (a.k.a *Andromeda*) to provide scalable and resilient cloud-based services and solutions.
  - Design and develop innovative software solutions to improve the resource utilization, scalability, and resiliency of Andromeda's control plane.
  - Lead the design and deployment of testing units for end-to-end software evaluation and performance measurement.
  - Work closely with developers and site reliability engineers to debug and triage production issues via complex monitoring and data analysis systems.
  - Maintain the codebase via continuous code refactoring and review sessions, develop internal micro tools to automate manual system management tasks, document and present complex technical solutions, and provide coaching and mentorship.
- 

## 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

---

## SKILLS & TOOLS

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

**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

---

## SELECT PROJECTS

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

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!

 <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++.


---

## 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
- 

## ASSOCIATION & MEMBERSHIP

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

## 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
- 

## 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.

---

## 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

- NDNCComm '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)
-