

# Khaled Diab, PhD

Research Faculty  
School of Computing Science  
Simon Fraser University

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## EDUCATION

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- **Simon Fraser University** Burnaby, BC  
*PhD in Computer Science* Jan. 2014 – Aug. 2019
  - *Dissertation:* Traffic-engineered Distribution of Multimedia Content
  - *Supervisors:* Mohamed Hefeeda and Jiangchuan (JC) Liu
- **Cairo University** Cairo, Egypt  
*BSc in Computer Engineering* Sep. 2006 – May 2011

## RESEARCH INTERESTS

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- Multicast systems; Datacenter networking; Programmable computer networks; Multimedia systems; Cloud computing

## RESEARCH EXPERIENCE

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- **Simon Fraser University** Burnaby, BC  
*Research Faculty* Sep. 2019 – Present
  - **Research:** My current research spans multiple areas such as multicast systems, service chaining, multimedia systems and cloud gaming.
  - **Teaching:** I develop and teach system-related courses such as advanced computer networking and network and system security.
  - **Service:** I co-designed the cybersecurity stream for the school professional master program.
- **Simon Fraser University** Burnaby, BC  
*Research Assistant* Jan. 2014 – Aug. 2019

My research focused on developing algorithms and testbeds for building traffic-engineered multimedia distribution systems. Specifically, I worked on designing efficient algorithms to stream multiview videos, building new CDN architectures and developing new multicast forwarding systems.
- **Qatar Computing Research Institute** Doha, Qatar  
*Research Assistant* Feb. 2012 – Oct. 2013

My research focused on dynamic sharing of GPUs in cloud systems, real-time 3D video retargeting and 3D video streaming system. I also contributed to the development of a large-scale infrastructure for executing NLP workloads.

## INDUSTRY EXPERIENCE

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- **Mentor Graphics** Cairo, Egypt  
*Software Development Engineer* Aug. 2011 – Jan. 2012

Building an IDE for hardware engineers and developers.
- **Cairo Microsoft Innovation Center** Cairo, Egypt  
*Research Intern* Summer 2010

Developing a frontend for the lab's morphological analyzer engine as well as some backend features for the engine.

## PUBLICATIONS AND PREPRINTS

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- N. Sharma, P. Moghadam, **K. Diab** and M. Hefeeda. *MobiSpectral: Turning Mobile Devices into Hyperspectral Cameras* (To be submitted)
- P. Yassini, **K. Diab** and M. Hefeeda. *Saqr: Distributed In-network Task Scheduler for Datacenters* (To be submitted)
- **K. Diab** and M. Hefeeda. *Efficient Multicast Forwarding* (To be submitted)
- **K. Diab**, P. Yassini and M. Hefeeda. *Orca: Server-assisted Multicast for Datacenter Networks* (To appear in USENIX NSDI'22)

- **K. Diab** and M. Hefeeda. *Yeti: Stateless and Generalized Multicast Forwarding* (To appear in USENIX NSDI'22)
- O. Mossad, **K. Diab**, I. Amir and M. Hefeeda. *DeepGame: Efficient Video Encoding for Cloud Gaming*. In Proc. of ACM MM'21.
- **K. Diab**, C. Lee and M. Hefeeda. *Oktopus: Service Chaining for Multicast Traffic*. In Proc. of IEEE ICNP'20.
- M. Hegazy, **K. Diab**, M. Saeedi, B. Ivanovic, I. Amer, Y. Liu, G. Sines and M. Hefeeda. *Content-aware Video Encoding for Cloud Gaming*. In Proc. of ACM MMSys'19. **[Best Student Paper Award]**
- **K. Diab** and M. Hefeeda. *Joint Content Distribution and Traffic Engineering of Adaptive Videos in Telco-CDNs*. In Proc. of IEEE INFOCOM'19,
- **K. Diab** and M. Hefeeda. *MASH: A Rate Adaptation Algorithm for Multiview Video Streaming over HTTP*. In Proc. of IEEE INFOCOM'17.
- K. Calagari, T. Elgamal, **K. Diab**, K. Templin, P. Didyk, W. Matusik and M. Hefeeda. *Depth Personalization and Streaming of Stereoscopic Sports Videos*. In ACM Trans. Multimedia Comput. Commun. Appl. 12, 3, Article 41 (March 2016).
- K. Calagari, K. Templin, T. Elgamal, **K. Diab**, P. Didyk, W. Matusik and M. Hefeeda. *Anahita: A System for 3D Video Streaming with Depth Customization*. In Proc. of ACM MM'14.
- **K. Diab**, T. Elgamal, K. Calagari and M. Hefeeda. *Storage optimization for 3D streaming systems*. In Proc. of ACM MMSys'14.
- **K. Diab**, M. M. Rafique and M. Hefeeda. *Dynamic sharing of GPUs in cloud systems*. In Proc. of IPDPS Workshops and PhD Forum (IPDPSW'13).

## PATENTS

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- MM. Rafique, M. Hefeeda and **K. Diab**, *Graphics processing unit controller, host system, and methods*, 2018, United States US9875139B2.

## GRADUATE STUDENTS SUPERVISED

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(Note: serving on their supervisory committees)

- Parham Yassini, MSc (Graduated: October 2021)
- Carlos Lee, MSc (Graduated: August 2020)

## MENTORING EXPERIENCE

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- Omar Mossad, PhD at SFU (September 2019 – Present)
- Neha Sharma, PhD at SFU (January 2021 – Present)
- Muhammad Hashmi, PhD at SFU (October 2021 – Present)
- Muhammad Shahzaib Waseem, MSc at SFU (October 2021 – Present)
- Trevor Gale, Undergraduate (May 2019 – August 2019)
- Qiao Chen, Undergraduate (August 2016 – January 2017)

## TEACHING EXPERIENCE

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### Instructor

Spring '22, '21, '20: Systems and Network Security

Fall '20: Computer Networking II

Fall '19: Multimedia Systems

## PROFESSIONAL SERVICE

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### Program Committee

2022: IEEE INFOCOM

2021: IEEE INFOCOM, ACM NOSSDAV

### External Reviewer

Journals: ACM TOMM, IEEE/ACM ToN, IEEE TNSM, IEEE TMM, IEEE TCSVT

2021: ACM Multimedia

2020: ACM Multimedia

2019: ACM Multimedia, ACM Multimedia Systems, ACM Multimedia Asia

2017: ACM Multimedia, ACM NOSSDAV

2015: ACM Multimedia, ACM Multimedia Systems

### Thesis Committee

2021: Parham Yassini (Supervisor), Puria Azadi Moghadam (Supervisor), SyedHamed RahmaniKhezri (Chair)

2020: Carlos Lee (Supervisor), Amgad Ahmed (Chair)

## RECOGNITIONS AND AWARDS

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- Best Student Paper Award for *Content-aware Video Encoding for Cloud Gaming*, ACM MMSys 2019.
- ACM Student Research Competition Travel Award, ACM SIGCOMM 2017
- Travel scholarship, the ACM 50th Celebration of the Turing Award, ACM SIGMM 2017
- Computing Science Graduate Fellowship, Simon Fraser University, Spring 2017
- Graduate Fellowship, Simon Fraser University, Fall 2017