Khaled Diab, PhD

Research Faculty
School of Computing Science
Simon Fraser University

Email : kdiab@sfu.ca
www.kdiab.ca

Education

- **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

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

Research Experience

- **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

- **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

- 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

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

Graduate Students Supervised

(Note: serving on their supervisory committees)

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

Mentoring Experience

- 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

Instructor

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

Fall '20: Computer Networking II

Fall '19: Multimedia Systems

Professional Service

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

- 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