Computer Science Department, SBASSE

Basit Shafiq
Associate Professor & Chair of CS
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Department Vision

To be a world class Computer Science Department which is recognized for excellence in teaching and research

CS Faculty & Research Areas

Systems/Security

Basit Shafiq (Purdue, USA)
Fareed Zaffar (Duke, USA)
Mobin Javed (UC Berkeley, USA)

Machine Learning/AI

Agha Ali Raza (CMU, USA)
M. M. Awais (Imperial, UK)
Asim Karim (Ohio, USA)

HCI/ICTD

Suleman Shahid (Tilburg, NL)
Maryam Mustafa (TUB, Germany)

Software Engineering

Naveed Arshad (Boulder, USA)
Junaid Siddiqui (UT Austin, USA)
Shafay Shamail (Bath, UK)

CV/Algorithms

Murtaza Taj (Queen Mary, UK)
Imdad Ullah Khan (Rutgers, USA)

Networks/IoTs

Hamad Alizai (Aachen, Germany)
Zafar Qazi (Stony Brook, USA)
Zartash Uzmi (Stanford, USA)
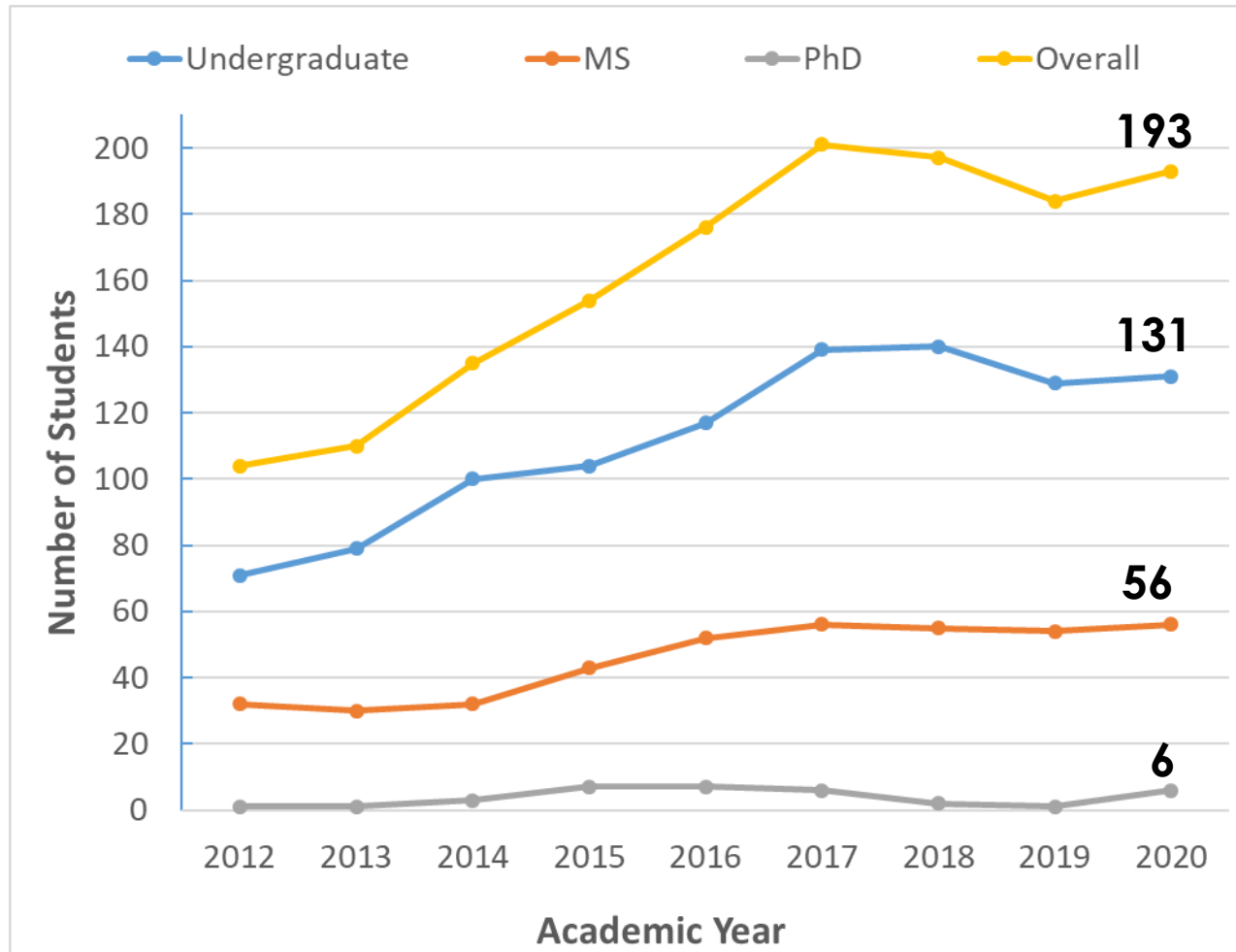Ihsan Qazi (Pittsburgh, USA)

Agenda

- Key Challenges

- Strategic Vision of CS@LUMS

- Achievements

Key Challenges

- Growing CS enrollment
  - Large class sizes, less interaction with faculty,…

- Attracting high quality faculty

- COVID-19 impact
  - Lab-based courses
  - Senior-year projects and theses

Rising CS Enrollments

Annual Intake

Number of Students

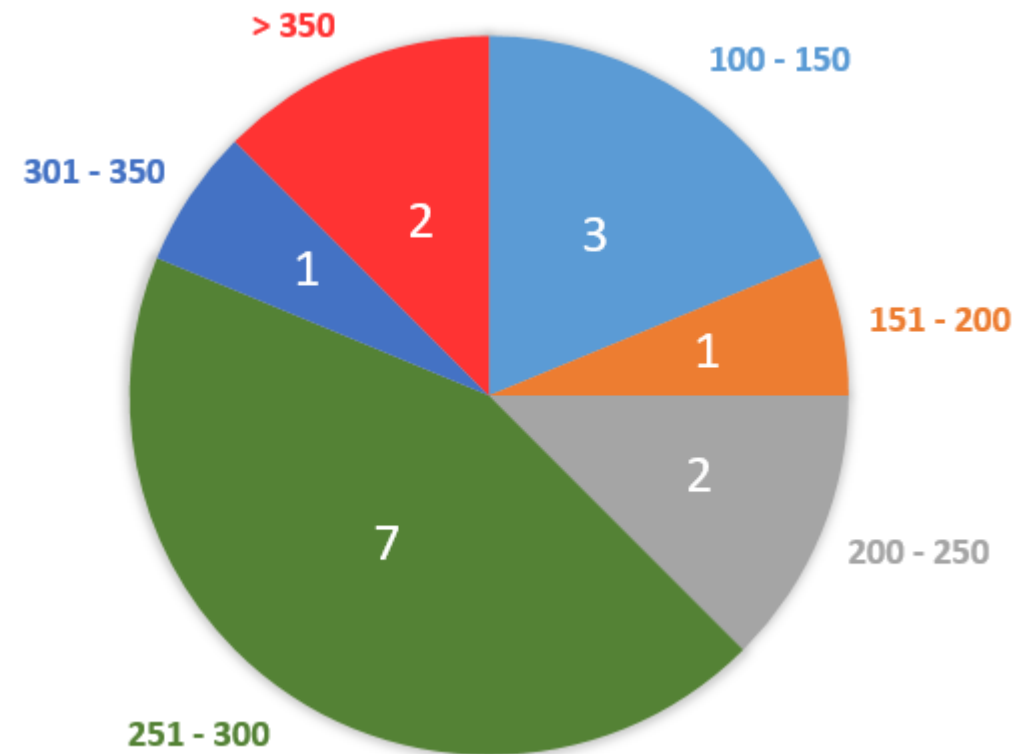|	
Undergraduate	408
MS	130
PhD	19
Overall	557

Student-Faculty Ratio

32

CS@LUMS

15

LUMS

Faculty Teaching Load

Number of students taught in the Calendar Year 2020

Faculty	No. of Students	Faculty	No. of Students
Muhammad Awais	390	Naveed Arshad	251
Shafay Shamail	355	Zafar Qazi	214
Junaid Siddiqui	325	Ihsan Qazi	210
Murtaza Taj	288	Zartash Uzmi	158
Maryam Mustafa	287	Asim Karim	115
Agha Ali Raza	274	M. Hammad Alizai	114
Basit Shafiq	273	Mobin Javed	103
Suleman Shahid	265	Fareed Zaffar*	23
Imdadullah khan	264	*on Sabbatical in Spring 2020	

Pie chart: Number of students taught (Calendar Year 2020)
- 100 - 150: 3
- 151 - 200: 1
- 200 - 250: 2
- 251 - 300: 7
- 301 - 350: 1
- > 350: 2

Strategic Vision

- Teaching
- Research (5-10 years)
- Faculty hiring
- Faculty development
- Graduate program
- Research funding
- Alumni engagement and placements
- Research centers

Strategic Vision: Teaching

How should we teach large classes and maintain high quality?

- Strategy
  - Started creating multiple sections
  - Need to engage our PhD students to serve as co-instructors or head TAs
  - Leverage available resources/programs at LUMS Learning Institute for training of PhD students and Teaching Fellows
  - Collaborate with other departments (e.g., EE) for joint course offerings in common areas
  - Look for experts in the Industry to teach specialized courses in their area of expertise

Strategic Vision: Research (5-10 years)

Build on existing strengths to address challenging problems of local relevance and global significance

- Transdisciplinary approach encouraging collaboration across departments/schools to work on various aspects of a common problem in a holistic manner
- Existing strengths and initiatives
  - Energy, environment, precision agriculture & forestry, cybersecurity & cyberpsychology, Big data, ICTD, education, digital government, digital inclusion, etc.

Strategic Vision: Faculty Hiring

Recruit the best faculty working in emerging areas to strengthen and diversify our research portfolio and academic activities

- Strategy
  - Reach out to potential faculty applicants
    - ▶ Invite accomplished faculty/researchers for research talks, teaching courses, including Pakistani CS researchers abroad
  - Offer greater flexibility and support in teaching and research

Strategic Vision: Faculty Development

Provide an environment that enhances faculty careers and enable them to realize their full potential

- Strategy
  - To put in place a formal faculty mentorship program
  - To facilitate participation in faculty development programs
  - To create spaces (e.g., *knowledge-sharing* sessions and social meetings) where faculty can frequently interact and share experiences
  - To leverage existing research group, centers, and institutes for enhancing the productivity of young faculty

Strategic Vision: Graduate Program

Produce researchers and scholars who will contribute to the technology infrastructure development of the country, advance the field through knowledge creation and dissemination, and serve the critical needs of society

- Challenge: Ensuring a continuous stream of quality students

- Strategy
    ▸ To undertake a better outreach effort (e.g., faculty talks, local workshops)
    ▸ To create opportunities for long-term research visits of Ph.D. students (e.g., HEC IRSIP, Erasmus, DAAD)
    ▸ To attract students who are working in the industry / R&D organizations
    ▸ To establish linkages of students with industry / R&D organizations
    ▸ To improve Ph.D. students' stipends through external grants

Strategic Vision: Research Funding

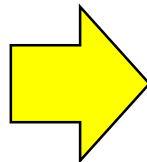*Establish a sustainable and effective research program that addresses the needs of our society*

- Strategy
  - Diversify portfolio of funding
    - ▶ Technology vs. Policy (e.g., Facebook vs. World Bank)
    - ▶ Research vs. Entrepreneurship (e.g., HEC vs. Ignite)
  - Encourage and facilitate the faculty in getting local and international funding
  - Establish linkages with international partners to seek funding from sources that require international collaborations (e.g., EU Erasmus+, GCRF, USAID, UKAID, GCF)
  - Explore funding opportunities with local sources (e.g., Fatima Group, CPPA, NDRMF)
    - ▶ Leverage our connections established through the different centers and labs (e.g., NCBC, WIT, Energy Institute, LLI, TPI, CBS)
  - Establish a grant writing pipeline with the help of existing centers

Strategic Vision: Alumni Engagement and Student Placements

- Need consistent engagement with alumni

- Strategy
  - To engage alumni as part of dept. advisory council
  - To share departmental newsletter with alumni

Strategy
Better Outreach
Engagement

What we did?
• Put together a committee on Alumni, Student Placement & Activities, Outreach
• Started process of CS Alumni Association
• Alumni talks and mentorship sessions
• CS Day + Sproj show

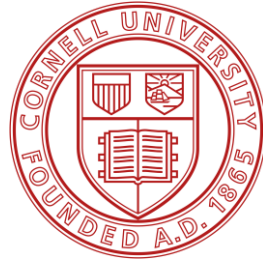# Students' Achievements & Updates

PhD Students / Graduates

Graduates

Acad. Year	Student	Advisor
2020-21	Samar Abbas	Hamad Alizai
2019-20	Saad Ahmed	Hamad Alizai
	Affan Rauf	Junaid Siddiqui
	Maryam A. Ghafoor	Junaid Siddiqui
	M. Haroon Shakeel	Asim Karim
	Numan Khurshid	Murtaza Taj
2018-19	Syed M. Irteza	Ihsan Qazi
	Adil Zia Khan	Ihsan Qazi
2017-18	M. Kamran Nishat	Ihsan Qazi
	Ayesha Afzal	Basit Shafiq
	Aamir Zaheer	Sohaib Khan
	Khawaj Fahad	Faqir Bhatti

Publications

- Conferences
  - SIGCOMM, WWW, INFOCOM, ICDCS, IPSN, ICONIP, …

- Journals
  - IEEE/ACM Trans on Networking, IEEE Trans. on Services Computing, IEEE Trans. on Reliability, ACM Trans. on Embedded Computing Systems, ACM Trans. on Sensor Networks, IEEE Trans. on Geoscience and Remote Sensing, Information Processing & Management, …

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Graduate Admissions (2014-2020)

...UCLA, Michigan Ann Arbor, Brown University, Wisconsin Madison, Rice University, USC, Duke University, NYU, Rutgers, UMass Amherst, Boston University, Virginia Tech, Iowa State, UBC, Univ. Toronto, Northeastern, Pittsburgh, Oregon,...

Industry Placements (2014-2020)

- International
  - Facebook: Mohsin Ali, Hasnain Pirzada, Hasnain Lakhani,…
  - Google: Reema Bajwa, Aqib Nisar, Ahmed Mehfooz, Naina Raisinghani, Maisem Ali, Jehangir Kazi, Shalan Naqvi,…
  - Amazon: Mutahir Kazmi, Hassan Haseeb, Hasan Nawaz,…
  - Microsoft: Haseen Niaz, Haris Choudhry, Basma Khan, Shanzae Khan, Saman Zia,…
  - Apple: Zuha Agha and Ahmed Riaz
  - VMware, HP, Cisco, Oracle, Intel, Salesforce, PlayStation, Yelp, Careem, Uber,…
- Local
  - Afiniti, Confiz, PakWheels, Techlogix, NetSol, Arbisoft,…
  - Large impact on local industry

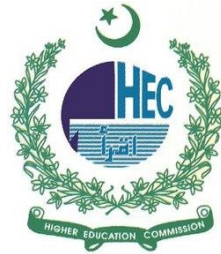# Internships & Entrepreneurship

- Internships
  - Stanford Research Institute (SRI), USA
  - Google
  - Duke University, USA
  - EPFL, Switzerland
  - ETH Zurich, Switzerland
  - Koc University, Turkey

- Several students incubated at the LUMS Center for Entrepreneurship and have started their companies

Faculty Achievements & Updates

Research Grants

External
PKR 920M

Internal
PKR 90.6M

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Collaborations, Visits, Talks, Courses

- Collaborations with Industry and Academia
  - [Industry] Google, Facebook, Microsoft Research, Huawei, Zong,...
  - [Academia] Duke, UC Berkeley, Brown, UIUC, RWTH Aachen, Iowa, Tufts,...

- Faculty Participation in Program Committees
  - ACM SIGCOMM, IPSN, USENIX Security, ASE, ACM IMC, ACM CoNEXT, ICDCS, ...

- Best Paper Award
  - ACM SIGCOMMM Best Paper Award for the following work: "*Inside the Walled Garden: Deconstructing Facebook's Free Basics Program*"

- Faculty Invited Talks and Visits
  - Facebook, Netflix, Google, UC Berkeley, RWTH Aachen, Kyoto University, ...

- Some New Courses
  - Deep Learning (Murtaza Taj), Principles and Techniques of Data Science (Mobin Javed), ICTD (Maryam Mustafa)

Thanks!