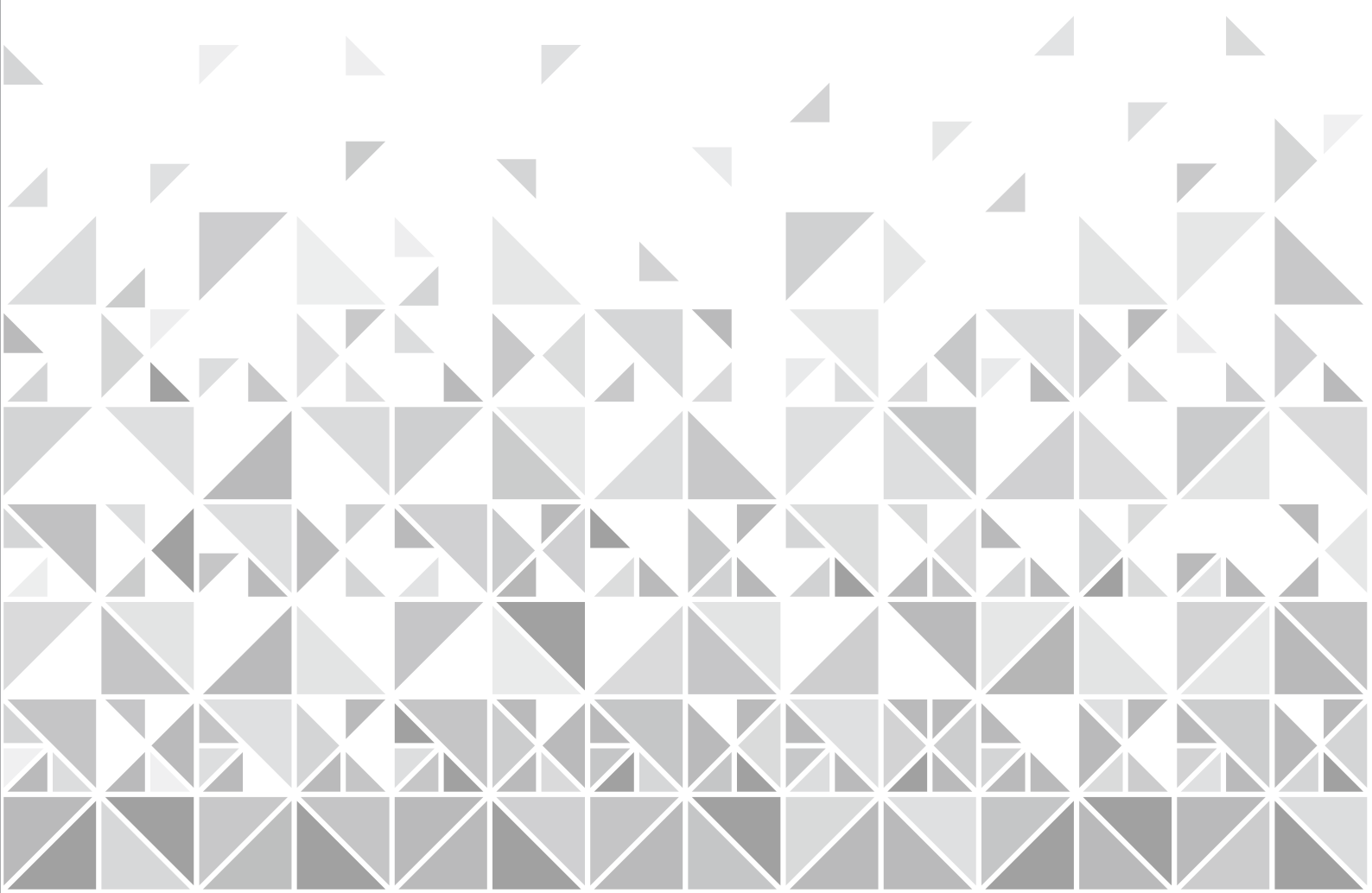


Carnegie Mellon University Qatar



**Research
Initiatives**
2016-17

MILESTONES. ACHIEVEMENTS. CMU-Q RESEARCH IN REVIEW





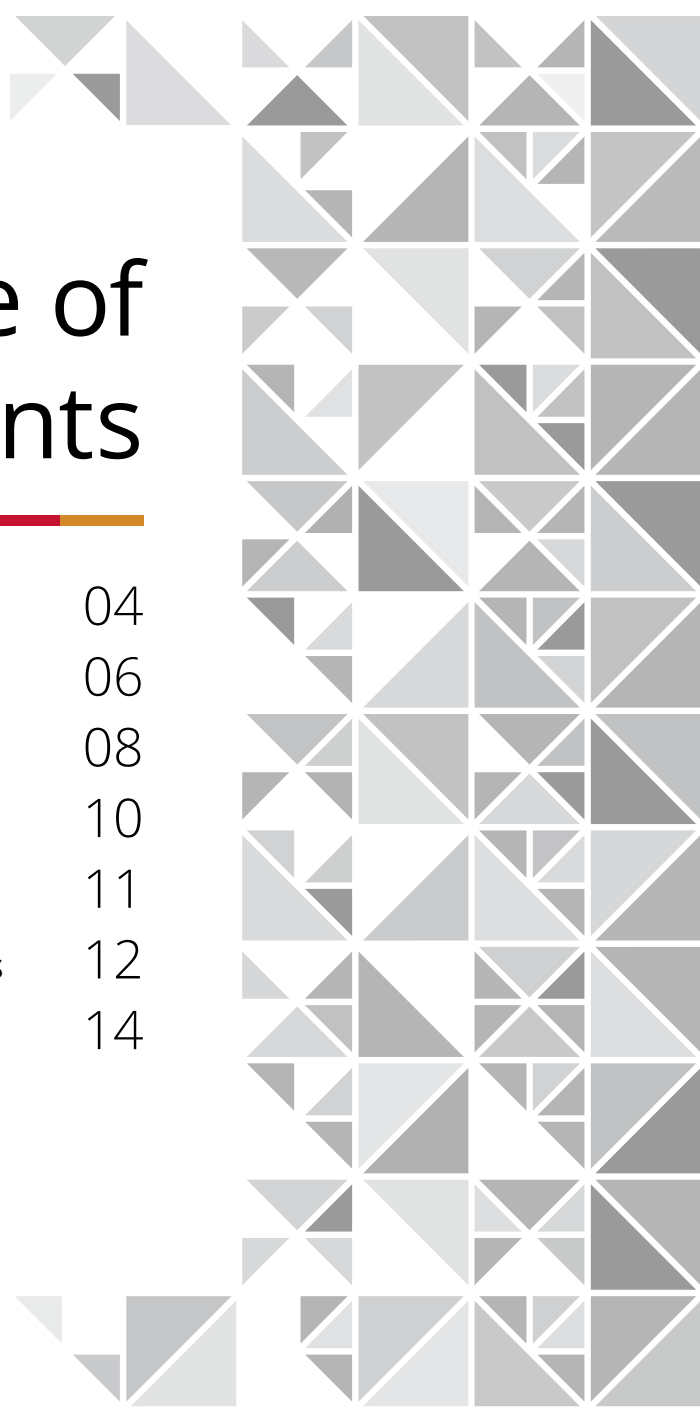


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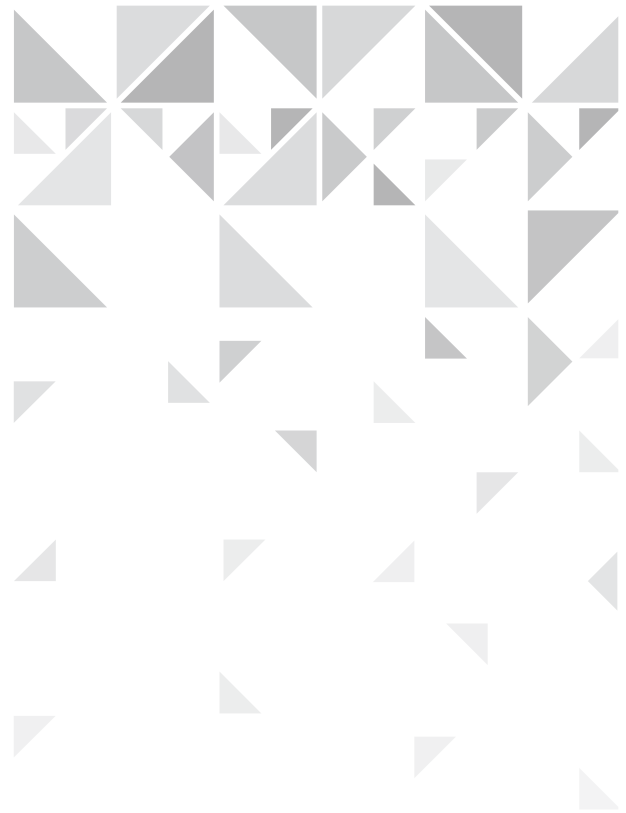


From the Dean

From computing to the environment to biotechnology, research at Carnegie Mellon University focuses on finding practical answers to complex problems. As an institution, CMU cultivates hard work, critical thinking and creativity, and research at Carnegie Mellon University in Qatar is no exception.

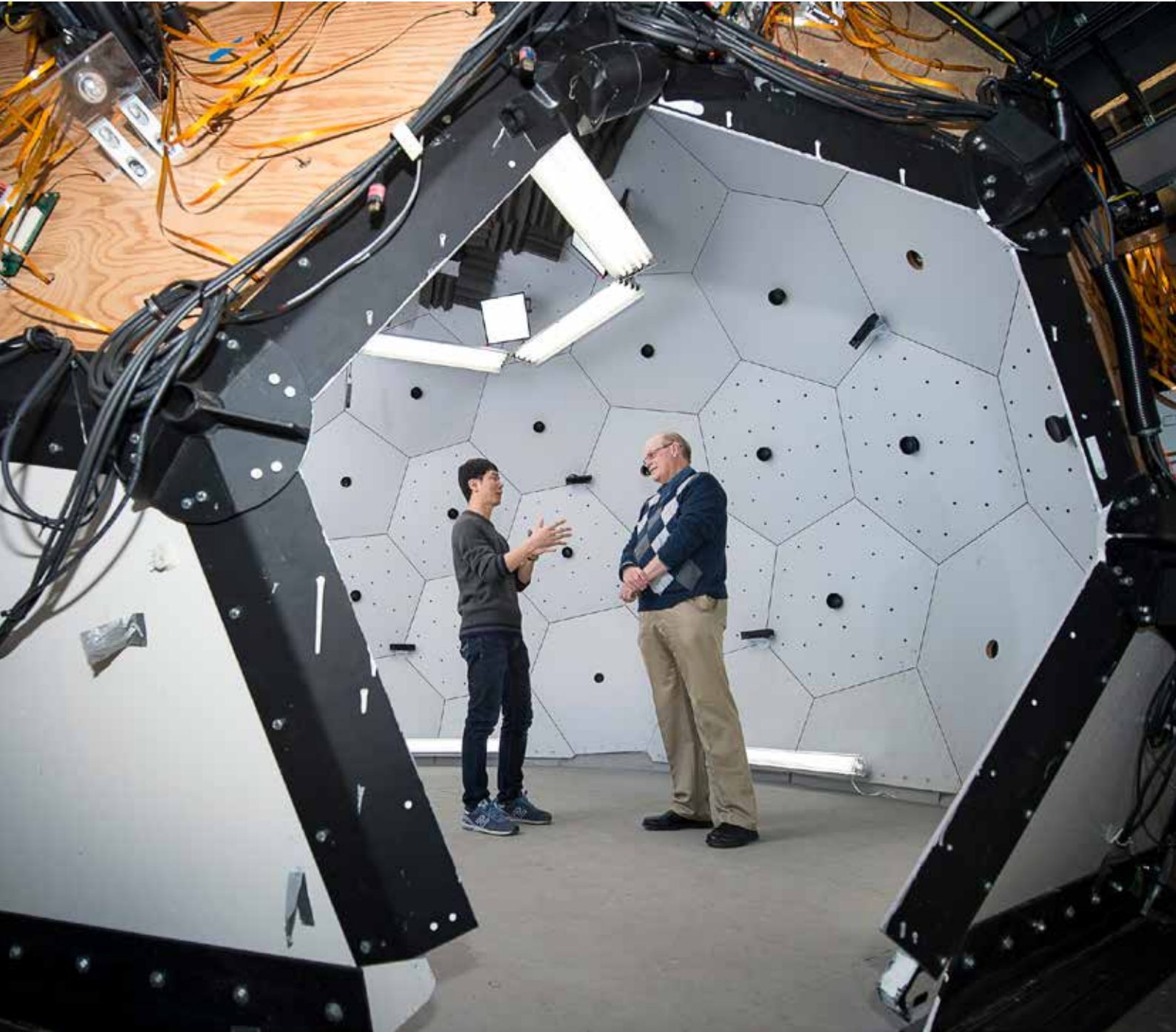
While the primary goal of CMU-Q is to educate undergraduate students, we encourage faculty members to pursue their own research interests. This research is a crucial part of the university environment, stimulating thought, raising challenging questions and gaining new understanding.

For students, participating in research nurtures the skills of creativity and critical thinking. Some students are inspired to continue their studies and pursue careers in research. For others, the intellectual rigor of research is invaluable experience in problem solving, and they can apply these skills in their professional careers, regardless of the industry.



Research Initiatives 2016-17 is a synopsis of the research at CMU-Q over the academic year. I encourage you to read through and learn more about the thought and inquiry taking place at Carnegie Mellon University in Qatar.

Michael Trick
Dean



John O'Brien and Hanbyul Joo are part of a collaborative Qatar and Pittsburgh research team exploring the behavior of successful negotiators.



RESEARCH

**DEFINING REAL-WORLD PROBLEMS.
EXPLORING, TESTING, DISCOVERING.
WORK THAT MATTERS.**

A research institute like no other, Carnegie Mellon is home to the world's leading experts in a range of fields. In this tradition, Carnegie Mellon Qatar nurtures and develops opportunities for faculty members and students to build regionally relevant research programs in their areas of expertise.

Faculty Research

Most faculty members contribute to the CMU-Q body of work through studies funded by Qatar National Research Fund (QNRF) and internal seed research funds.

New NPRP awards

In May 2017, CMU-Q researchers were awarded four new National Priorities Research Program (NPRP) grants by the Qatar National Research Fund. CMU-Q has been awarded a total of 53 NPRP grants in 10 cycles of funding.



Gianni Di Caro seeks to develop swarms of unmanned aerial and surface robots that are equipped with GPS devices and sensors for marine environmental monitoring.



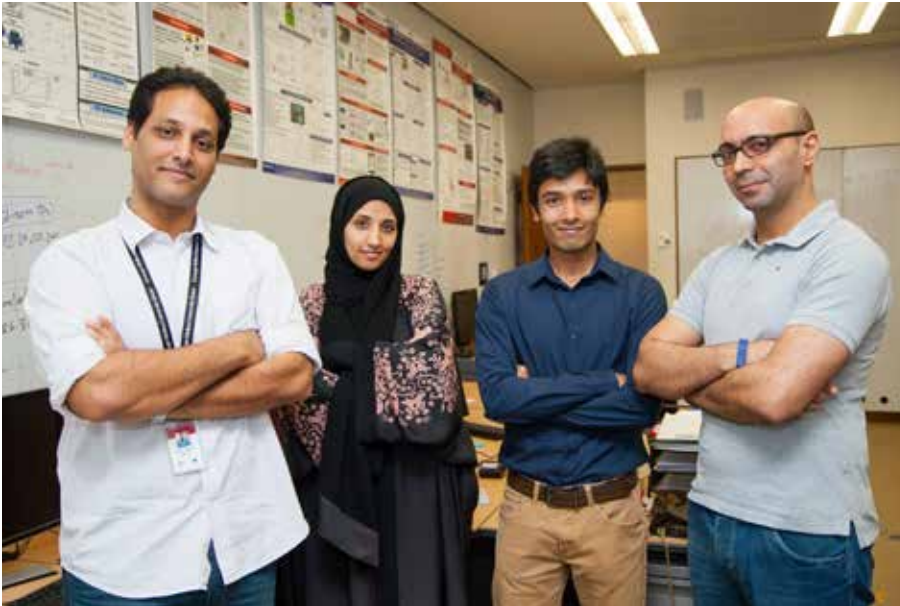
Saquib Razak will be expanding Alice Middle East by creating a three-year curriculum for local middle schools. Alice ME is an interactive software tool that teaches programming.



Annette Vincent will investigate using bacteriophages—viruses that infect bacteria—as biomonitoring tools to provide a more accurate assessment of water quality. PI: **Valentin Ilyin**



Ihab Younis will study the molecular indicators of breast cancer, which is the most commonly diagnosed cancer among women in Qatar.



The mobile opportunistic cloud computing team is led by **Khaled Harras**, left, and includes **Hend Gedawy**, **Sannan Tariq** and **Abderrahmen Mtibaa**.

Funded projects fall within the core disciplines of biological sciences, business administration, computational biology, computer science and information systems, as well as complementary areas like mathematics, social sciences, languages, and environmental science.

Ongoing NPRP projects

- Role of the PDZ and LIM containing protein Zasp in integrin-mediated cell adhesion
Lead PI: **Mohamed Bouaouina**
- Arab author profiling for cyber-security
Lead PI: **Anis Charfi**
- New mathematical models for the large stratin swelling response of biological tissues: Applications to edema, inflammation, and pregnancy
Co-Lead PI: **Hasan Demirkoparan**
Lead PI: **Thomas Pence**, Michigan State
- Scalable analytics engine for big graphs on the cloud
Lead PI: **Mohammad Hammoud**
- Towards mobile opportunistic cloud computing: Enabling generic computation offloading to extreme heterogeneous entities
Lead PI: **Khaled Harras**
- MADAR: Multi-Arabic dialect applications and resources
Co-Lead PI: **Kemal Oflazer**
Lead PI: **Nizar Habash**, New York University Abu Dhabi
- Testing English reading comprehension through deep text analysis and question generation;
Lead PI: **Kemal Oflazer**
PI: **Teruko Mitamura**, Carnegie Mellon University
- SLATE-Q: Scaffolding literacy in academic and tertiary environments: The case of communication in information systems
Lead PI: **Silvia Pessoa**
PI: **Selma Limam Mansar**
PI: **Divakaran Liginlal**
PI: **Susan Hagan**
- Automated verification of properties of concurrent, distributed and parallel specifications with applications to computer security
Co-Lead PI: **Giselle Reis**
Lead PI: **Iliano Cervesato**, Carnegie Mellon University

Completed Projects

The National Priorities Research Program (NPRP) is the main funding program of QNRF and the primary means by which QNRF seeks to support research that addresses Qatar's needs.



Kemal Oflazer and Houda Bouamor

Completed NPRP projects

Usable automated data inference for end-users

Lead PI: **Iliano Cervesato**
Co-PI: **Cleotilde Gonzalez**, Carnegie Mellon University

Investigators established the feasibility of a relational reasoning tool for end-users based on the NEXCEL design and studied how people approach relational reasoning.

OPTDIAC: An optimal diacritization scheme for Arabic orthographic representation

Lead PI: **Mona Diab**, George Washington University
Co-Lead PI: **Kemal Oflazer**
Co-Investigator: **Houda Bouamor**

This project investigated the semantic disambiguation of Arabic text through optimal diacritization, resulting in several schemes with positive impact on readability.

Learning4teaching study—Qatar

Lead PI: **Donald Freeman**, University of Michigan
Co-Lead PI: **Dudley Reynolds**
Co-Investigator: **Abdullah Abu-Tineh**, Qatar University

This project advanced the understanding of how Qatar English language teachers experience professional development and its influences on their classroom teaching.

Alice in the Middle East

Lead PI: **Saquib Razak**
Co-Lead PI: **Wanda Dann**, Carnegie Mellon University

This project localized the Alice tool for the Middle East and created a computing curriculum for K-12 that showed a marked increase in student problem solving skills and computational thinking.

Student Research



Carnegie Mellon has been a leader in undergraduate research for decades. The Qatar Student Initiated Undergraduate Research Program supports student-initiated research and encourages cross-disciplinary projects.

QSIURP

The Qatar Student-Initiated Undergraduate Research Program (QSIURP) awards funding to undergraduates at Carnegie Mellon University in Qatar for summer research in any field of study.

QSIURP projects are research, scholarly, or artistic activities that lead to one or more of the following:

- the production of new knowledge
- increased problem-solving capabilities
- original, critical, or historical theory and interpretation
- the production of art or artistic performance

There are two types of funding available:

- Fellowships: students may apply for up to ten weeks of summer research in any field of study.
- Grants: individuals or groups may apply for grants to assist with required supplies or equipment for research.

QSIURP Cycle 2016-17: Awarded and Completed Projects

A distributed approach to multi-robot collision-free vehicle routing in dynamic environments, **Zan Naeem, Mohamed Zakzok**
Faculty advisor: **Gianni Di Caro**

Effect of aspartame on human embryonic kidney cells, **Fatema Abdul Salik, Reema Subeh**
Faculty advisor: **Annette Vincent**

Identifying regulators of minor intron splicing in breast cancer cells, **Nourhan ElKhatib, Reem Elasad**
Faculty advisor: **Ihab Younis**

Minimizing cost to estimate accuracy of human labeling and automated classifiers, **Sabit Hassan, Shaden Shaar**
Faculty advisor: **Bhiksha Raj**

Meeting of the Minds

Meeting of the Minds is the annual undergraduate research symposium at CMU-Q.



Dr. Barak Yehya, center, is a long-time supporter of undergraduate research and Meeting of the Minds.

The Meeting of the Minds student research symposium is a celebration of the ingenuity, hard work, scientific exploration and intellectual curiosity that characterizes students in all disciplines at CMU-Q. Using posters, videos and other visual aids, students present their research and project work to a wide audience of faculty, fellow students, family members, industry representatives and the larger community.

At Meeting of the Minds 2017, students presented 27 posters in the disciplines of biological sciences, computer science and information systems. There were two post-graduate posters.

Student research is evaluated by a panel of internal and external judges. In 2017, judges represented Hamad Bin Khalifa University, Hamad Medical Corporation, Ministry of Development, Planning

and Statistics, Northwestern University in Qatar, Qatar Biomedical Research Institute, Qatar Computing Research Institute, Qatar Mobility Innovation Center, Qatar National Research Fund, Qatar Science and Technology Park and Weill-Cornell Medicine-Qatar.

In addition to the CMU-Q awards, two organizations present special awards. **Dr. Barak Yehya** from the Ministry of Development Planning and Statistics presented five awards for research that has particular relevance to Qatar. The Qatar National Research Fund awarded two prizes, one for 'Best Project' and one for 'Best Poster.'



An information systems project investigates how Arabs engage with digital heritage artifacts.

Meeting of the Minds is inspired by the annual university-wide celebration of research on the main campus.

Award winners

Best Project

1. MAPK14 minor intron splicing as novel biomarker for breast cancer, **Ettaib El-Marabti**
2. An agile platform for distributed computation in smart IoT environments, **Sannan Tariq**
3. Application based learning to reinforce academic concepts in Qatar biology curriculum, **Mohammad Osaama bin Shehzad**

Best Poster

- MAPK14 minor intron splicing as novel biomarker for breast cancer, **Ettaib El-Marabti**

QNRF

- **Best Project:** The Hive: An on-edge middleware solution for context and resource sharing in the Internet of Things, **Aliaa Essameldin**
- **Best Poster:** BCL2L11 as gene target of mir-92 and mir-10a: Gene expression, interaction evaluation and implication in type 2 diabetes and obesity, **Alya Al-Kurbi**

Ministry of Development Planning and Statistics

- Potential food poison analysis of phage DNA collected from Al Khor, **Raghid Bsot**
- Biofilm formation in water systems in Doha, **Khawla Al-Darwish**
- Application based learning to reinforce academic concepts in Qatar biology curriculum, **Mohammad Osaama bin Shehzad**
- The effect of culture on image appeal and social presence in Arab e-commerce websites, **Noor AlQaedi**
- Arabic author profiling for cybersecurity, **Wajdi Zaghouni, Anis Charfi** (Post-graduate Poster)

My heart is
in the work

Andrew Carnegie





APPENDICES

NPRP GRANTS
PUBLICATIONS AND PRESENTATIONS
MEETING OF THE MINDS POSTERS

Appendix 1

National Priorities Research Program (NPRP) grants awarded to Carnegie Mellon faculty

| | Lead PI in Qatar | NPRP | Title |
|---------|--------------------|--------------------|---|
| Cycle 1 | Amal Al-Malki | NPRP 29-6-7-9 | Images of Muslim women in translated Mideast media sources: A content and discourse analysis |
| | Majd Sakr | NPRP 29-6-7-24 | Human-robot interaction in an Arabic social and cultural setting |
| | M. Bernardine Dias | NPRP 1-7-7-5 | Automated tools for effective team coordination in emergency response |
| | M. Bernardine Dias | NPRP 30-6-7-91 | Enhanced education for the visually and aurally impaired using automated tutors and interactive computer games |
| | Jonathan Caulkins | NPRP 20-6-7-6 | Modeling control of infectious disease |
| | Charles Thorpe | NPRP 29-6-7-43 | Intelligent diabetes assistant: Predicting and optimizing blood glucose |
| | Aziz Lookman | NPRP 30-6-7-28 | Are banks better at managing their borrower's risks than non-banks |
| Cycle 2 | Alex Rojas Pena | NPRP 08-643-1-112 | Automated measurement of galaxy morphology |
| | Brett Browning | NPRP 08-589-2-245 | Non-destructive gas pipeline inspection using computer vision |
| | Khaled Harras | NPRP 08-562-1-095 | CameraNets: Coverage, networking, and storage problems in wireless multimedia sensor networks |
| | Kemal Oflazer | NPRP 08-485-1-083 | Improved Arabic natural language processing through semi supervised and cross-lingual learning |
| Cycle 3 | Silvia Pessoa | NPRP 09-857-5-123 | Transnational labor migration in Qatar: An empirical sociological analysis |
| | Kemal Oflazer | NPRP 09-1140-1-177 | Learning from comparable corpora for improved English-Arabic statistical machine translation |
| | Brett Browning | NPRP 09-980-2-380 | Robust localization and mapping for autonomous gas inspection vehicles |
| | Majd Sakr | NPRP 09-1116-1-172 | Qloud: Towards a cloud computing infrastructure in Qatar to target regional scientific applications |
| | Majd Sakr | NPRP 09-1113-1-171 | Towards natural multi-cultural human-robot interaction |
| | Kemal Oflazer | NPRP 09-1113-1-171 | A natural language processing-based active and interactive platform for accessing English language content and advanced language learning |
| | Iliano Cervesato | NPRP 09-1107-1-168 | Formal reasoning about language for distributed computation |
| | Iliano Cervesato | NPRP 09-667-1-100 | Effective programming for large distributed ensembles |
| Cycle 4 | M. Bernardine Dias | NPRP 4-439-1-071 | Innovative computing and mobile technology for improving English literacy skills for children and for adults |
| | M. Bernardine Dias | NPRP 4-1330-1-213 | Cooperative robotic boats for monitoring coastal and flooded areas |
| | Andreas Karatsolis | NPRP 4-1538-6-048 | Improving professional communication skills through an online tutorial |
| | Iliano Cervesato | NPRP 4-341-1-059 | Usable automated data inference for end-users |
| | Dudley Reynolds | NPRP 4-1172-5-172 | Improving reading skills in the middle school science classroom |
| | Majd Sakr | NPRP 4-1058-1-168 | Automatic correction of Standard Arabic text: Resource and system development |
| | Hasan Demirkoparan | NPRP 4-1138-1-178 | New mathematical models for the large strain swelling response of biological tissues |
| | Hasan Demirkoparan | NPRP 4-1333-1-214 | Complex material response described by continuum mechanics with a deformation gradient product decomposition that has novel hyperelastic implications |
| | Zeinab Ibrahim | NPRP 4-1074-5-164 | Advancing Arabic language learning in Qatar |

| | Lead PI in Qatar | NPRP | Title |
|----------|--------------------------|---------------------|--|
| Cycle 4 | Vinay Kolar | NPRP 4-1620-1-266 | Large-scale, personal and mobile sensor networks and their applications in Qatar |
| | Krishnapuram Karthikeyan | NPRP 4-783-1-119 | Plant uptake of pollutants of emerging concern during use of reclaimed water in greenhouse hydroponic systems |
| | Krishnapuram Karthikeyan | NPRP 4-718-2-268 | Use of novel water treatment methods for desalination of brackish groundwater in Qatar |
| Cycle 5 | Davide Fossati | NPRP 5-939-1-155 | Intelligent learning environments for computer science undergraduate education |
| | Divakaran Liginlal | NPRP 5-1393-6-044 | Raising language effectiveness in Arabic ecommerce websites |
| | Yonina Cooper | NPRP 5-1070-2-451 | Alice for Middle East—Alice ME |
| | Silvia Pessoa | NPRP 5-1320-6-040 | Undergraduate discipline-specific writing: Expectations, demands, and development |
| Cycle 6 | Kemal Oflazer | NPRP 6-1020-1-199 | OPTDIAC: An optimal diacritization scheme for Arabic orthographic representation |
| | Jonathan Finkel | NPRP 6-1130-3-267 | Adherence and biofilm formation of pathogenic yeast and yeast-like fungi from the Qatari clinical setting |
| Cycle 7 | Mohamed Bouaouina | NPRP 7-1872-1-331 | Role of the PDZ and LIM containing protein Zasp in integrin-mediated cell adhesion |
| | Iliano Cervasato | NPRP 7-988-1-178 | Automated verification of properties of concurrent, distributed and parallel specifications with applications to computer security |
| | Mohammad Hammoud | NPRP 7-1330-2-483 | Scalable analytics engine for big graphs on the cloud |
| | Dudley Reynolds | NPRP 7-1393-5-209 | Learning4Teaching-Qatar: Examining Qatari teachers' experiences of professional development in English language teaching |
| | Snezhana Abarzhi | NPRP 7-1785-1-321 | Numerical and theoretical modeling of complex fluid flows |
| | Kemal Oflazer | NPRP 7-290-1-047 | MADAR: Multi-Arabic dialect applications and resources |
| Cycle 8 | Kemal Oflazer | NPRP 8-1337-1-243 | Testing English reading comprehension through deep text analysis and question generation |
| | Khaled Harras | NPRP 8-1645-1-289 | Towards mobile opportunistic cloud computing: Enabling generic computational offloading to extreme heterogeneous entities |
| | Silvia Pessoa | NPRP 8-1815-5-293 | SLATE-Q: Scaffolding Literacy in Academic and Tertiary Environments: The case of communication in information systems |
| | Gordon Rule | NPRP 8-2225-1-439 | Development of novel antibiotic, antiparasitic and anticancer agents |
| | Hasan Demirkoparan | NPRP 8-2424-1-477 | New mathematical models for the large strain swelling response of biological tissues: Applications to edema, inflammation, and pregnancy |
| 9 | Anis Charfi | NPRP 9-175-1-033 | Arabic author profiling for cyber security |
| Cycle 10 | Ihab Younis | NPRP 10-0117-170178 | Molecular profiling of breast cancer transcriptome and splicing aberrations |
| | Annette Vincent | NPRP 10-0119-170197 | Using bacteriophages as biomonitoring tools for water quality measurements |
| | Saqib Razak | NPRP 10-0205-170345 | Bringing computer science to secondary schools – Curriculum design and implementation |
| | Gianni Di Caro | NPRP 10-0213-170458 | Teams of aquatic/aerial robots for marine environmental monitoring (TARMEM) |

Appendix 2

Publications and presentations by faculty members

Serkan Akguc and N. Al-Rahahleh. "Shariah compliance and investment behavior: Evidence from GCC countries," Midwest Finance Association 2017 Annual Meeting, Chicago, USA.

Chadi Aoun and Savanid Vatanasakdakul. "Enabling community resilience: A context specific approach," Pre-ICIS SIGGreen Workshop, Dublin, Ireland.

Hasan Demirkoparan, A.Hadoush and T.J. Pence. "A constitutive model for an internally balanced compressible elastic material." In *Mathematics and Mechanics of Solids*, 22.

Hasan Demirkoparan and J. Merodio. "Bulging bifurcation of inflated cylinders of doubly fiber-reinforced hyperelastic material under axial loading and swelling." In *Mathematics and Mechanics of Solids*, 22.

Hasan Demirkoparan, H. Topol, T.J. Pence and A. Wineman. "Time-evolving collagen-like structural fibers in soft tissues: Biaxial loading and spherical inflation," In *Mechanics of Time-Dependent Materials*, 21.

Hasan Demirkoparan. "MATLAB for computer graphics and MS Excel's solver for optimization problems," *Technology for Mathematics Education* T4M2017.

Gianni Di Caro, A.Giusti, J. Guzzi, D.Ciresan, F.Lin, J.P. Rodriguez, F. Fontana, M. Faessler, C.Forster, J. Schmidhuber, D. Scaramuzza, and L. Gambardella. "A machine learning approach to visual perception of forest trails for mobile robots." In *IEEE Robotics and Automation Letters*, 1(2): 661-667.

Gianni Di Caro, B. Gromov, and L. Gambardella. "Wearable multi-modal interface for human multi-robot interaction." In *Proceedings of the 14th IEEE International Symposium on Safety, Security and Rescue Robotics (SSRR)*.

Gianni Di Caro, E. Feo-Flushing, and L. Gambardella. "Robot rostering: Coalition formation for long-term missions with work shifts." In *Proceedings of the 14th IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR)*.

Gianni Di Caro, E. Feo-Flushing, and L. Gambardella. "On using mobile robotic relays for supporting data communications in search and rescue missions." In *Proceedings of the 14th IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR)*.

Gianni Di Caro and J.Guzzi. "From indoor GIS maps to path planning for autonomous wheelchairs." In *Proceedings of the 29th IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.

John Hooker and D. Bergman, A. Ciré and W.-J. van Hoeve. "Decision diagrams for optimization."

John Hooker. "Projection, consistency, and George Boole." In *Constraints* 21, pp 59-76.

John Hooker, D. Bergman, A.A. Ciré, and W.-J. van Hoeve. "Discrete optimization with decision diagrams." In *INFORMS Journal on Computing* 28, pp 47-66.

John Hooker, A. Ciré, J.N. Hooker and T. Yunes. "Modeling with metaconstraints and semantic typing of variables." In *INFORMS Journal on Computing* 28, pp 1-13.

John Hooker and H.P. Williams. "Integer programming as projection." In *Discrete Optimization* 22B, pp 291-311.

John Hooker and A. Heching. "Scheduling home hospice care with logic-based Benders decomposition." In *CPAIOR 2016 Proceedings*, pp 187-197.

John Hooker, E. Çoban, A. Heching, and A. Scheller-Wolf. "Robust scheduling with logic-based Benders decomposition." In *OR 2014 Proceedings, Springer*, pp 99-106.

John Hooker and A. Ciré, E. Çoban. "Logic-based Benders decomposition for planning and scheduling: A computational analysis." In *Knowledge Engineering Review* 31, pp 440-451.

John Hooker. "Projection, inference and consistency." In *IJCAI 2016 Proceedings*, pp 4175-4179.

John Hooker. "Finding alternative musical scales." In *CP 2016 Proceedings*, pp 753-768.

John Hooker. "Cross-cultural ethics and sustainability." Abu Dhabi University.

John Hooker. "Sustainability around the world." Professional workshop, Abu Dhabi, United Arab Emirates.

John Hooker. "Scheduling home hospice care by logic-based Benders decomposition." Distinguished lecture, Lehigh University.

John Hooker. "Learning-based methods for large-scale optimization." Whitney Symposium, GE Global Research Center.

John Hooker. "Finding alternative musical scales." Constraint Programming Conference.

John Hooker. "Projection, inference, and consistency." International Joint Conference on AI.

John Hooker. "Scheduling home hospice care by logic-based Benders decomposition." European Conference on Operational Research.

Zeinab Ibrahim. "Language variation, identity and planning." In *Arabe standard et variations régionales. Quelle(s) politique(s) linguistique(s) Quelle(s) didactique(s).*

Zeinab Ibrahim, P.M. Papadopoulos and A. Karatsolis. "Learning Arabic through play games on tabletop surface computers in early childhood." In *Computer Supported Education 2015, Communications in Computer and Information Science.*

Zeinab Ibrahim, H. Alshikhabobakr and P. Papadopoulos. "Teaching Arabic to native speakers - Educational games in a new curriculum." In *Proceedings of the 8th International Conference on Computer Supported Education (CSEDU).*

Zeinab Ibrahim, R. Muhr, K.E. Fonyuy and C. Miller. "Pluricentric languages and non-dominant varieties worldwide: Pluricentric languages across continents - features and usage."

Zeinab Ibrahim. "Professional Arabic in action." University of Quebec in Trois-Rivières, Canada.

Zeinab Ibrahim. "Arabiyyatii" Roundtable, Georgetown University in Qatar.

Christos Kapoutsis and Lamana Mulaffer. "A logical characterization of small 2NFAs." In *Proceedings of International Conference on Implementation and Application of Automata 2016 (LNCS 9705),* pp.163- 175.

Christos Kapoutsis and Lamana Mulaffer. "A logical characterization of small 2NFAs." International Conference on Implementation and Application of Automata 2016, Seoul, South Korea.

Niraj Khare, R. Lorentz and C. Yan. "Moments of matching statistics." In *Journal of Combinatorics* Volume (8) Issue 1, 1 to 27.

Niraj Khare. "Patterns in combinatorial structures and Fun." Combinatorics Seminar at Ohio State University.

Divakaran Liginlal, R. Ahmad, L. Torlakova, and R. Meeds. "Figurative language in Arabic e-commerce text." In *International Journal of Business Communication,* 54(2), 2017.

Divakaran Liginlal, Y. Deng, X. Yang, J.H. Hou, and X. Ma. "Applying the Cox Model to study online gambling behavior." International Conference on Information Systems, Dublin, Ireland.

Divakaran Liginlal and D. Al Muftah. "Web accessibility as a barrier to successful digital governance: A case study of the Arabian gulf region." International Conference on Information Resources Management, Santiago Chile.

Teresa MacGregor, Alicia Salaz, and P. Thomas. "Novice and expert information behavior: An eye tracking study from Qatar." European Conference on Information Literacy. Prague, Czech Republic.

Teresa MacGregor and J. Chisnell "Speed databasing: A matchmaking activity for students and library databases." LOEX 2017. Carnegie Mellon University.

Joyce Oates and Z. Peynircioğlu. "Event-based prospective memory is resistant but not immune to proactive interference." In *American Journal of Psychology.*

John O'Brien and Fuad Farooqi. "A comparison of the impact of the Basel standards upon Islamic and conventional bank risks in the Gulf state region." In *Journal of Islamic Accounting and Business Research.*

John O'Brien and M. Fichman. "Investing in three point shooting: A strategic portfolio management approach." In *Journal of Sports Analytics.*

John O'Brien and M. Fichman. "Optimal shot selection strategies for the NBA." MathSport International, Melbourne, Australia.

Kemal Oflazer, R. Dekharghani, Y. Saygin, and B. Yanikoglu. "SentiTurkNet: a Turkish polarity lexicon for sentiment analysis." In *Language Resources and Evaluation.*

Kemal Oflazer, R. Dekharghani, Y. Saygin, and B. Yanikoglu. "Sentiment analysis in Turkish at different granularity levels." In *Natural Language Engineering.*

Kemal Oflazer, Wajdi Zaghouani, Houda Bouamor, M. Ghoneim, and M.Diab. "Using ambiguity detection to streamline linguistic annotation." In *Proceedings of Coling Workshop "Computational Linguistics for Linguistic Complexity" (CL4LC).*

Kemal Oflazer, Wajdi Zaghouani, Houda Bouamor, N. Habash, O. Obeid, and S. Alqahtani. "Filtering dialectal Arabic text in two large scale annotation projects." In *Proceedings of the Coling Workshop on Noisy User-generated Text (W-NUT).*

Appendix 2 continued

Silvia Pessoa. "How SFL and explicit language instruction can enhance the teaching of argumentation in the disciplines." In *Journal of Second Language Writing*.

Silvia Pessoa, Thomas D. Mitchell, and R.T. Miller. "Longitudinal changes in use of engagement in university history writing: A case study." *Conference Proceedings of the 2014 Free Linguistics Conference*, Indonesia.

Silvia Pessoa and R.T. Miller. "Role and genre expectations in undergraduate case analysis in information systems." In *Journal of English for Specific Purposes*.

Silvia Pessoa and R.T. Miller. "Where's your thesis statement and what happened to your topic sentences? Identifying organizational challenges in undergraduate student argumentative writing." In *TESOL Journal*.

Silvia Pessoa Thomas D. Mitchell, and R.T. Miller. "Impact of source text genre and prompts on students' genre uptake." In *Journal of Second Language Writing*.

Silvia Pessoa and R.T. Miller. "Implementing writing at an American branch campus in Qatar: Challenges, adaptations, & recommendations." Book Chapter: *Writing in the MENA Region*.

Silvia Pessoa and A. Gardner. "Migrants and justice in Qatar: Time, mobility, language and ethnography." Book chapter: *Lived experiences in a transnational world*.

Silvia Pessoa, A. Gardner, A. Diop, K. Alghanim, K. Le Trung and L. Harkness. "A portrait of migrant workers in contemporary Qatar." Book chapter: *Asianisation of migrant workers in the Gulf countries*.

Silvia Pessoa and Thomas D. Mitchell. "Research-based scaffolding of university-level argumentative history writing." Australian Systemic Functional Linguistics Association.

Silvia Pessoa and Thomas D. Mitchell. "Emergent arguments: Applying the 3x3 to student history texts." Australian Systemic Functional Linguistics Association.

Silvia Pessoa, Thomas D. Mitchell, R.T. Miller, M.J. Schleppegrell, and R. Harman. "Using systemic functional linguistics & genre-based pedagogy to scaffold reading and writing in history." American Association of Applied Linguistics.

Silvia Pessoa, Thomas D. Mitchell, R.T. Miller and C. Nigel. "Argue, contend, exort: Teaching the language of argumentative writing." *Teachers of English to Speakers of Other Languages*.

Silvia Pessoa, Thomas D. Mitchell, R.T. Miller, A. Johns, and M.E. Brisk. "Empowering students through explicit instruction of genres and linguistic resources." *Teachers of English to Speakers of Other Languages*.

Saquib Razak, Nour Tabet, H. Gedawy, and H. Alshikhabobakr. "From Alice to Python. Introducing text-based programming in middle schools."

Giselle Reis, D. Cerna, A. Leitsch, S. Wolfsteiner. "Ceres in intuitionistic logic." In *Annals of Pure and Applied Logic*.

Giselle Reis, D. Cerna, A. Leitsch, and S. Wolfsteiner. "Ceres in intuitionistic logic." Herbrand's Theorem Revisited.

Giselle Reis, D. Cerna, A. Leitsch, and S. Wolfsteiner. "Ceres in intuitionistic logic." FISP Workshop.

Giselle Reis and B. Woltzenlogel Paleo. "Translations from resolution to sequent calculus." *Women in Logic Workshop*.

Dudley Reynolds. "Helping content teachers move beyond language: Translanguaging in lesson study groups." In M. A. Snow & D. M. Brinton (Eds.), *The content-based classroom: Perspectives on integrating language and content (2nd ed.)*. Ann Arbor: University of Michigan Press.

Dudley Reynolds, D. Freeman, W. Toledo, and A. Abu-Tineh. "Who provides professional development? A study of ELT professional development in Qatar." In *Iranian Journal of Language Teaching Research*.

Dudley Reynolds, D. Freeman, K. Graves, C. Cameratti, and M. Epperson. "Development in EFL classroom teaching: Research from three countries." *Colloquium. TESOL 2017 International Convention and English Language Expo*. Seattle, Washington.

Dudley Reynolds. "Professional English language teachers in a 2.0 world," and "Learning4Teaching project." Invited talks. *TESOL International Convention and Language Expo*. Seattle, Washington.

Dudley Reynolds. "Advancing as an ELT professional," "Being strategic at strategic reading," and "Advancing through research." Invited talks. *TESOL Arabia Conference*. Dubai, United Arab Emirates.

Dudley Reynolds "Teaching with an empty glass: Lesson designing from scratch," and "Teaching organization for writing." Invited talks. *NEA English Language Fellow Mid-Year Conference: Planning for Success*. Manama, Bahrain.

Dudley Reynolds. "Summit purpose welcoming session." Invited talk. Summit on the Future of the TESOL Profession. Athens, Greece.

Dudley Reynolds. "Through the teachers' eyes: Understanding professional development uptake." Paper presentation. 37th Thailand TESOL International Conference. Bangkok, Thailand.

Dudley Reynolds. "The professional English language teacher's pathway to excellence." Invited talk. 37th Thailand TESOL International Conference. Bangkok, Thailand.

Dudley Reynolds. Professional development agendas in the light of teacher experiences. TESOL Italy Conference. Rome, Italy.

Dudley Reynolds. "Languaging, teaching, shaping in a changing world." Invited talk. TESOL Italy Conference. Rome, Italy.

Dudley Reynolds. "Qatar: A microcosm for operating globally." Invited talk. National Geographic Learning Educational Forum: Operating Globally. Doha, Qatar.

Dudley Reynolds. "Expanding your horizons in ELT," and "Innovative ways to teach strategic reading." Invited talks. 32nd Annual Society of Pakistani English Language Teachers (SPELT) Conference. Karachi, Pakistan.

Dudley Reynolds. "Multilingual writers' challenge to research: Then, now, and in the future." Invited talk. "College Writing": From the 1966 Dartmouth Seminar to Tomorrow. Dartmouth College, Hanover, New Hampshire.

Alicia M. Salaz, Teresa MacGregor, and P. Thomas. "Expert information behavior: An eye-tracking study from Qatar." In *Communications in Computer and Information Science*, 676.

Alicia M. Salaz, K. Chang, M. Houlihan and S. Birch. "The future of U.S. university international branch campus libraries: Challenges and opportunities." In *College & Research Libraries News*.

Alicia M. Salaz. "Eye-tracking methodology for information literacy research" Information Literacy Network, Gulf Region Symposium.

Alicia M. Salaz, V. Medina, L. Saunders, and A. Ross. "Information literacy and accountability: Accreditation, alignment, and assessment." Special Libraries Association, Gulf Region Annual Conference.

Alicia M. Salaz and N. Johnston. "Using phenomenography to bridge the gap between research and practice." Research Applications, Information and Library Studies Conference.

Alicia M. Salaz and M. Houlihan. "Threshold concepts: the good, the bad and the ugly." Information Literacy Network, Gulf Region Professional Development.

Alicia M. Salaz, L. Al Sabbagh, and N. Johnston. "Print and digital reading preferences and behaviors of university students in Qatar." European Conference on Information Literacy.

Annette Vincent and Valentin Ilyin. "Identification and characterization of *Arthrobacter sp.* infecting *Bacillus* bacteriophage- *Shumi* from sand sample." IonWorld Qatar.

Annette Vincent, C. Doonan, and E. Drill. "Enhancing laboratory education with student-created videos." Association for Biology Laboratory Education 38th Annual Meeting Houston, USA.

Annette Vincent. "Microbial diversity in desalinated drinking water systems of Doha." At Quality of Desalinated Water, Human Health Perspectives Workshop.

Ihab Younis. "Splicing switches in breast cancer: Altered minor intron splicing and its effect on gene expression." Biomedical Research Center Seminar Series.

Ihab Younis. "Splicing switches: How minor introns determine the fate of gene expression." Life sciences seminar series. Hamad Bin Khalifa University.

Appendix 3

Meeting of the Minds posters

Biological Sciences Posters

Alkaline phosphatase isozymes and their use in gastrointestinal therapy

Potential food poison analysis of phage DNA collected from Al Khor

BCL2L11 as gene target of mir-92a and mir-10a: Gene expression, interaction evaluation and implication in type 2 diabetes and obesity

Biofilm formation in water systems in Doha

Developing CRISPR mutagenesis components for *S. Cerevisiae*

Caffeine as an inhibitor of calf intestinal alkaline phosphatase

MAPK14 minor intron splicing as a novel biomarker for breast cancer

Effect of glucagon-like peptide-1 analog on modulating metabolic stress: Possible role of heat shock response

Expression, purification, and characterization of stem cell transcription factors Brn2, Sox17 and its mutant

Crystallization and characterization of HMG domain of stem cell transcription factors Sox7, Sox17 and its mutant

Effect of hydrogen peroxide at 100 μ M on Calf Intestinal Alkaline Phosphatase (CIAP) enzyme kinetics

Mechanisms of breast cancer escape from Natural Killer (NK) anti-tumor immunity

Oxidative stress in kidney cells – effects of aspartame

The effects of Mg²⁺ and Zn²⁺ on human placental alkaline phosphatase (PALP) activity

Study of the role of Lactate Dehydrogenase C (LDHC) in the aggressive behavior of triple negative breast cancer

Application based learning to reinforce academic concepts in Qatar biology curriculum

Computer Science Posters

Acoustic analysis of text (AAT): Extracting sound out of words

An agile platform for distributed computation in smart IoT environments

Lifestyle disease surveillance using spatio-temporal search intensity models

PolyHJ: A polymorphic main-memory hash join paradigm for multi-core machines

Sherlock: A crowdsourced system for automated semantic tagging of indoor floorplans

The Hive: An on-edge middleware solution for context and resource sharing in the Internet of Things

Information Systems Posters

Optimizing electricity consumption in GEMTEC

To read or to listen? A study of user engagement in a digital heritage artifact

Trustmarks and trust in Qatar

Influence of culture on social media advertisements through eye-tracking

The effect of culture on image appeal and social presence in Arab e-commerce websites

Postgraduate Posters

Arabic author profiling for cyber-security

Multi-Arabic dialect lexicon extraction

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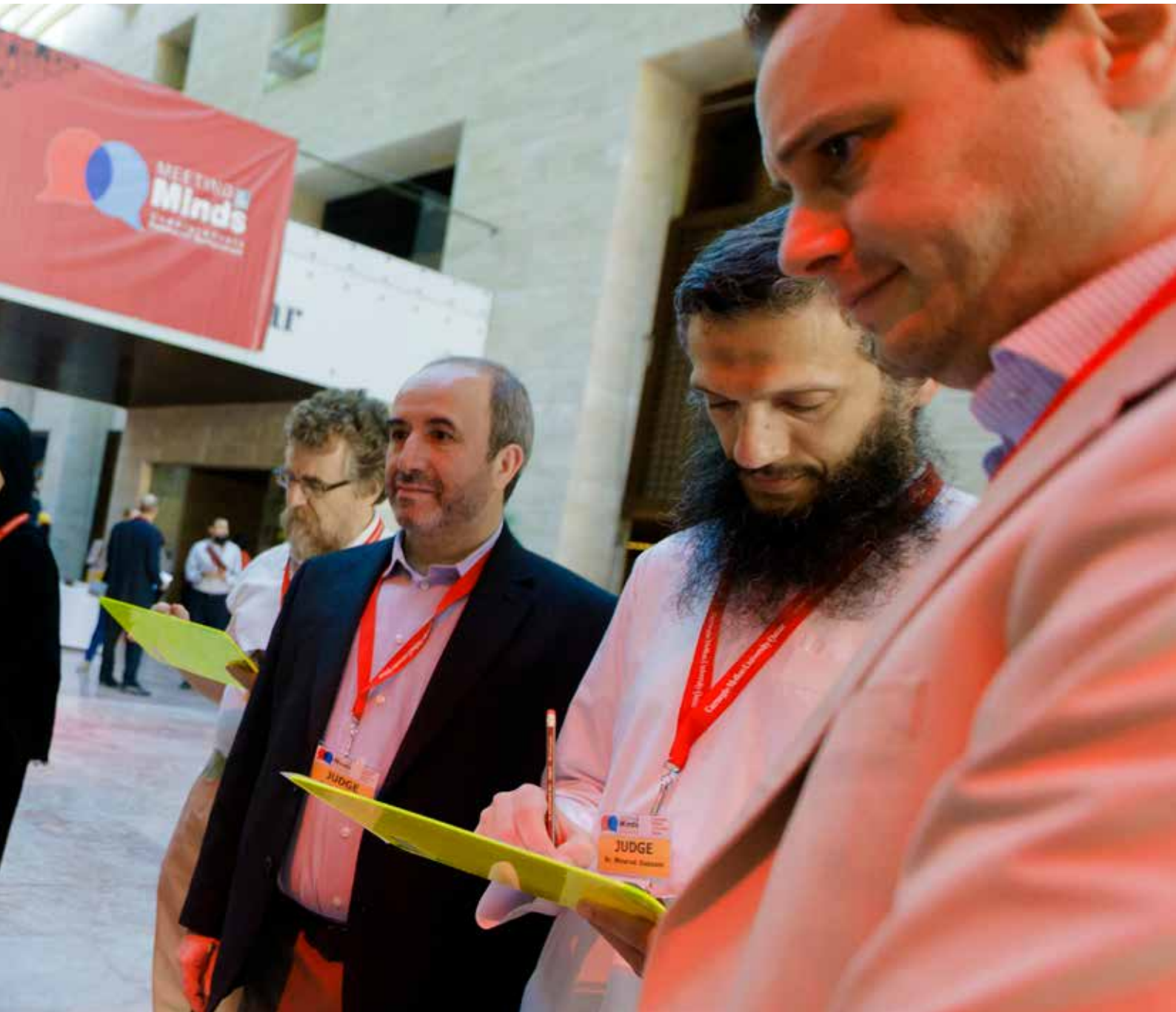
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