

Curriculum Vitae

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ISABEL QAMAR

CAREER SUMMARY

My research primarily aims to bridge the fundamental gap between **material science** and **computer science**, more specifically, in the area of shape-changing devices. I have focused on employing a bio-inspired approach to develop smart materials and structures that have novel functionality, presenting my work at the leading conferences in the research fields of composites, smart materials and self-healing (ICCM, SMASIS, ICSHM). I have successfully collaborated with researchers in different fields, resulting in top-tier journal publications and am a member of the Institute of Materials, Minerals and Mining (IOM3), the American Society of Mechanical Engineers (ASME) and the Association of Computing Machinery (ACM).

EXPERIENCE

Dec 2017 – PRESENT: EPSRC Doctoral Prize Fellow, Bristol Interaction Group (BIG), University of Bristol, UK

- 3D printing of electronics onto complex shape-changing topologies

Dec 2016 – PRESENT: Research Associate, Bristol Interaction Group (BIG), University of Bristol, UK

- Implementing outputs from material science to create morphing interactive devices within the Human Computer Interaction (HCI) community (Project Automorph)
- Development of an online platform at www.morphui.com for researchers in all fields to access outputs from this project

Apr 2016 – Oct 2016: Research Assistant, Bristol Composites Institute (ACCIS), University of Bristol, UK

- Recycling of High Performance Discontinuous Fibres (HiPerDiF) for 3D printing in the Advanced Composites Collaboration for Innovation and Science (ACCIS)

Sept 2014 – June 2016: Teaching Assistant, Dept. of Aerospace, University of Bristol, UK

- Assisting in Design and Manufacture (Mechanical Engineering) and Design and Computing (Aerospace) courses for undergraduate students
- Provided project support to final year research project students

Sept 2013 – Aug 2015: Placement Manager (Africa Region), Engineers without Borders UK

- Developing new partnerships with NGOs based in Africa
- Creating and managing international engineering placements and recruiting volunteers

July 2010 – Sept 2010: Internship, AgustaWestland, Yeovil UK

- Internship within the Helicopter Rotor Dynamics and Loads team

EDUCATION

2011 – 2017, PhD, University of Bristol, UK

- Thesis title: “Development of 3D Printed Vascular Networks for Repeated Self-Healing”
- Undertaken within the ACCIS Centre for Doctoral Training (CDT) which included a one-year MRes course in Advanced Composite Materials
- PhD supervisors: Prof. Richard Trask, Prof. Ian Bond



2007 – 2011, MEng in Aeronautical Engineering (*First Class Honours*), University of Bristol, UK

- Research project title: “Damage Tolerant Composite Body Armour – Biomimicry of Nature’s Materials”
- MEng Supervisor: Prof. Richard Trask

PUBLICATIONS

- **2018, Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)**, I.P.S. Qamar, R. Groh, D. Holman, A. Roudaut, “HCI meets Material Science – A Literature Review of Morphing Materials for the Design of Shape-Changing Interfaces”, Montreal, QC, Canada **Honourable Mention Award*
- **2018, Proceedings of the 2018 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '18)**, C. Mourozi, I.P.S. Qamar, A. Roudaut, “SweepScreen: Sweeping Programmable Surfaces to Create Low-fi Displays Everywhere”, Montreal, QC, Canada
- **2018, Proceedings of the 2018 CHI Workshop on Maker Movements, Do-It-Yourself Cultures and Participatory Design: Implications for HCI Research**, I.P.S. Qamar and A. Roudaut, “The Role of the Maker Movement in Bridging the Gap Between Material Science and HCI”, Montreal, QC, Canada
- **2017, Proceedings of the ASME 2017 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)**, I.P.S. Qamar, R.S. Trask, “Development of Multi-Dimensional 3D Printed Vascular Networks for Self-Healing Materials”, Snowbird, UT, USA
- **2015, Proceedings of the 20th International Conference on Composite Materials (ICCM20)**, I.P.S. Qamar, R.S. Trask, “Additive Layer Manufacturing of Vascular Networks for Repeated Self-Healing Functionality”, Copenhagen, Denmark
- **2015, Smart Materials and Structures 24(3)**: J. M. Hall, I. P. S. Qamar, T. Rendall, R. S. Trask. A computational model for the flow of resin in self-healing composites.
- **2014, Proceedings of the Second International Conference on Bioinspired and Biobased Chemistry & Materials (NICE)**, I.P.S. Qamar, R.S. Trask, I.P. Bond, “Development of Porous Networks, through Additive Manufacture, for Controlled Release of Self-Healing Functionality”, Nice, France
- **2013, Proceedings of the 55th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference**: J. Hall, I. Qamar, T. C. S. Rendall, R. Trask. A computational model for the flow of resin in self-healing composites. National Harbour, Maryland
- **2013, Proceedings of the Fourth International Conference on Self-Healing Materials (ICSHM)**, I.P.S. Qamar, R.S. Trask, I.P. Bond, “Controlled Repeated Release of Self-Healing Functionality”, Ghent, Belgium

HONOURS AND AWARDS

- **April 2018, CHI 2018 Honorable Mention Award** – Awarded for the paper titled “HCI meets Material Science – A Literature Review of Morphing Materials for the Design of Shape-Changing Interfaces” which ranks it amongst the top 5% of submissions to the ACM SIGCHI conference.
- **June 2014, DTC International Placement** - Secured funding for an extension of stay at the University of Massachusetts Lowell, USA based on a submitted proposal and presentation



- **June 2013, ICSHM 2013 Young Scientist Travel Award**, granted at ICSHM 2013 to undertake research under Prof. Chris Hansen at the University of Massachusetts Lowell, USA for a submitted research proposal on 3D printing of microfluidic networks
- **Dec 2013, Bristol PGR Award**, which recognises students that have gained significant professional and life skills through work experience, volunteering and other extra-curricular activities
- **Jan 2013, Duke of Edinburgh's Gold Award**

INVITED TALKS AND SEMINARS

- Session Chair: Crafting & Fabrication, CHI '18
- Co-organiser: Bristol workshop on Interactive Metamaterials, Mar 18
- HCI Guest Lecturer: Fabrication, Dec 17
- Session Co-organiser/Chair: Additive Manufacturing, SMASIS 2017
- Invited Speaker at Swansea University, Mar 17
- Dagstuhl Shape Changing Seminar, Feb 17
- EPSRC Breaking the Glass seminar, Jan 17