UNIVERSITY of BRADFORD

Faculty of Engineering & Informatics

Faculty of Engineering and Informatics Newsletter

December 2020

Welcome from the Dean

As we reach the end of this extraordinary year that has been 2020, I wanted to thank you all for the innovation, dedication, motivation and calm assuredness that you have all lived and breathed over the last ten months. This has been so valuable in helping the Faculty through some very difficult periods and your efforts in ensuring that our students have received the best learning experience possible, in very rapidly switching circumstances, have been tremendous. I attend campus once or twice per week and I have witnessed some very impactful face to face activity in learning and teaching that is so clearly appreciated by the students. A special note of thanks goes from me to our technical services team in this regard.

Research has continued throughout the year on and off campus with great energy, momentum and autonomy, and this reflects the maturity and professionalism of our research groups and their members. Knowledge transfer to industry has inevitably suffered during the pandemic but this will recover in time as our underlying applied research base is strong.

The professional support services in the Faculty and beyond, for example the Library and Health & Safety, have been wonderful throughout all the many changes we have made in response to the pandemic.

I am sure 2021 will be far from easy but we start the new year with a strong position and mindset to tackle the challenges we may face. We begin, as we are ending 2020, in strictly online mode to our students until the start of Semester 2 on 25 January 2021, when blended learning is scheduled to recommence. Please do relax and enjoy yourselves during the 2-week festive holiday period.

Newsletter summary:

1. Academic in profile

2. RKT News (grants applications, open calls, presentations and awards)

3. Staff and Students' news

Emergency COVID-19 Hardship Appeal

The University of Bradford has launched an Emergency COVID-19 Hardship Appeal to support students who are struggling to pay for essentials as a result of the pandemic.

Students are increasingly unable to cover the costs of basic living needs such as rent, food, and heating for their homes.

The donations and support of staff, alumni and friends will help struggling students get through these difficult times and continue their education.

More here: www.bradford.ac.uk/giving-to-bradford/hardship-appeal/

Academic in profile:

Dr Dhaval Thakker

Dr Dhaval Thakker joined the Faculty of Engineering and Informatics in May 2015 and is a Senior Lecturer in Computer Science. He is currently the Director of Postgraduate Research (DPGR) in the Faculty and leads the Internet of Things (IoT) Innovation Lab. Dhaval has over fifteen years of working experience in the European Union(EU) and industrial projects, researching and delivering innovative solutions. He is also part of the University's Research Practice Innovation Group led by the Pro-Vice-Chancellor (Research and Knowledge Transfer) to help shape the university's research and innovation (R&I) strategy.

Dhaval is a nationally and internationally recognised expert in the field of Semantic Web/Explainable Artificial Intelligence(AI), Internet of Things (IoT), and Smart Cities, with strong interdisciplinarity evident through his research outputs. His current research focus is to build innovative Explainable AI based techniques for smart/future cities . In particular, he is focusing on advancing Deep Learning, Explainable Artificial Intelligence(AI), and Citizen Science technologies to address Smart Cities problems, such as flood monitoring, mobility, urban planning, early warning systems (EWS), circular economy, digital health, and air quality monitoring. A key feature of his research is to design methodologies, and techniques that utilise the optimum combination of human knowledge with machine intelligence. He actively publishes (Google Scholar link) in leading high impact factor journals such as the Semantic Web Journal, Journal of Engineering Applications of Artificial Intelligence, Journal of Smart Cities, Journal of Internet of Things, and Transactions on Emerging Telecommunications Technologies. He regularly reviews for the Engineering and Physical Sciences Research Council (EPSRC), and the Natural Environment Research Council (NERC). He has been successful as Principal and Co-investigator in a number of R&I projects funded by national, international funding bodies and commercial organisations. Some of the notable funders have been the European Commission, Innovate UK, Digital Catapult, HEFCE, and GCRF, focusing on projects addressing societal challenges surrounding themes such as Smart Cities, Air Quality Monitoring, Flood Monitoring, Children's Health, Industry 4.0 (Smart Factories), and Archaeological & Drone-based surveys in War-torn areas.

Current research interests:

- Internet of Things (IoT)
- Smart Cities
- (Explainable) Artificial Intelligence/Semantic Web
- Natural Language Processing (NLP)
- Circular Economy
- Digital Health

Active research projects:

- Smart Cities and Open Data Reuse (SCORE)
- UrbaN Indoor Air Quality Monitoring Observatory (UNIAQ)
- Connected Places Catapult Project on Horizon Scanning of Integrated Urban Planning with Net Zero Carbon Emission Targets
- KTP - AI-based Expert System for Supporting Decision Making in UK Immigration Law

Research and Knowledge Transfer

Submitted Projects:

- A new process chain for high volume manufacturing of consumer devices with functional surfaces, EPSRC, Ben Whiteside, John Sweeney

- Functional digital twin for surface finish of additively manufactured industrial parts, EPSRC, Daniele Scrimieri

- Production of extruded PP and LLDPE based sheets, Fosroc International Limited, Adrian Kelly

- Scalable Visual Computing and Deep Learning Technologies to Support the Clinical Decision-Making for COVID-19 Diagnosis and Prognosis in acute hospitals, NIHR, Rami Qahwaji

Open calls for funding:

- ATF moving the UK automotive sector to zero emissions, closing date: 27 January 2021 11:00

- SBRI removing air pollutants from homes to safeguard health, closing date: 13 January 2021 11:00

- GCRF UKRI-JST-DOST research collaborations in south east Asia, closing date: 10 February 2021 16:00

- NERC highlight topics, closing date: 25 March 2021 16:00

- EPSRC postdoctoral fellowship, closing date: open - no closing date

Dr Dhaval Thakker called on to monitor huge fire in Bradford

Experts from the University of Bradford and University of Leeds were called to assist in the monitoring of air quality following the huge fire in the East Bowling area.
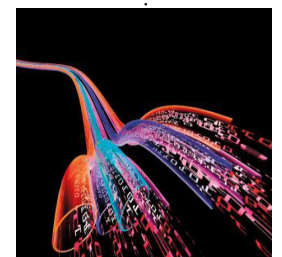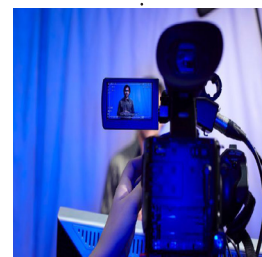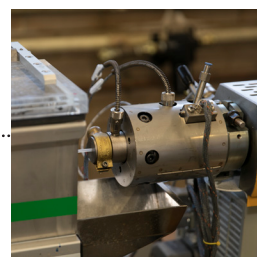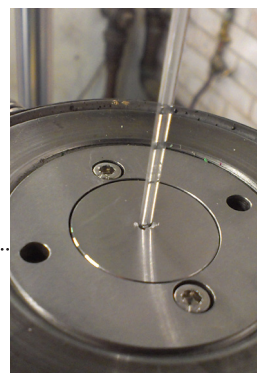
The fire, which saw rail lines, roads, schools and businesses closed, was so large that smoke reached as far as Leeds.

While firefighters tackled the fire, air quality data scientists from the University were called in by council chiefs to assess air quality. The results were used by Environment Agency officers who were on site after the event carrying out their own measurements.

More here: www.yorkshireeveningpost.co.uk/news/environment/major-scrap-tyre-fire-bradford-will-have-pollution-impact-worse-bonfire-night-3042430

Staff and Students' news

Biomaterials Science article by Dr Farshid Sefat on corneal translational medicine

Dr Farshid Sefat and his colleagues from Finland, UK and Iran published an extensive paper in the field of Cornea Translational Medicine in journal of Biomaterial Science (Royal Society of Chemistry with Impact Factor: 6.18).

More here: https://pubs.rsc.org/en/content/articlelanding/2020/BM/D0BM01209B#!divAbstract

Cornea Tissue Engineering

Dr Sohag Kabir publishes his work in IEEE Computer

Article title: Computational Intelligence for Safety Assurance of Cooperative Systems of Systems
Journal: Computer—Impact Factor: 4.419

More here: https://ieeexplore.ieee.org/document/9269913

Dr Nejat Rahmanian opens the AGM for Gas Processors Association (GPA)-Europe

Nejat was the invited speaker to GPA Europe to present an industrial case study as the opening to the AGM that comprised 120 representatives of giant oil/gas/petrochemical companies (BP, Shell, TOTAL, BASF, Schlumberger), engineering companies (Worley, Petrofac, KBR, Axens, Flour, Wood, Costain, Technip, Aker solutions, etc), as well as technology and R&D managers in the oil/gas sector. More information can be seen in https://gpaeurope.com/node/2223 Nejat is willing to expand the collaboration with the other departments in the faculty on related research on oil/gas projects.
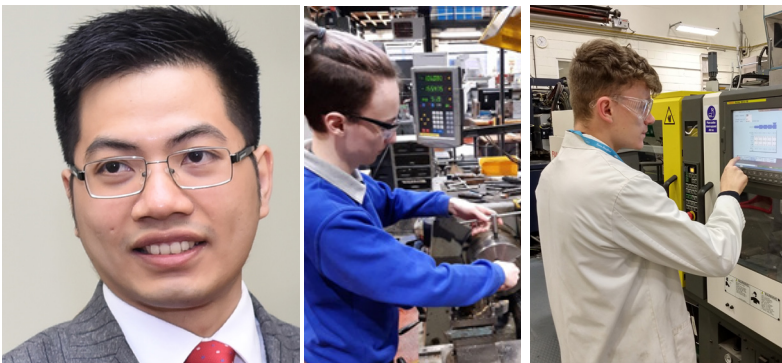
Staff and Students' news

Meet Our Apprentice Technicians: Dominic Burdett and Regan Broadbent

The Faculty is very fortunate to have apprentices working with our technical team to develop their own skills and to provide support in the workshops and labs. Currently, in Engineering there are two apprentice technicians, both are at Bradford College doing a Mechanical Engineering Apprenticeship one day a week.

Dominic Burdett (pictured below in the blue top) started working at the University in November last year in the IRC and is now working with the mechanical technicians in the Chesham workshop. Dominic spent some time last year in Electronics and will be moving back there next year where he will become more of a specialist in that field. This month we welcome our new apprentice Regan Broadbent (pictured below in the white lab coat) who started on the 23rd of November and is working in the Polymer IRC with Glen Thompson. He is currently helping Glen and the academic team in the workshop and labs to develop his skills. He has previously been a landscaper and a CNC Operator/Setter before joining us at the University. Regan is looking forward to a career in Engineering. Technical Services Manager David Barker said "Setting young people on in difficult times as we are currently going through is extremely important for organisations such as ours. Young people are the future, and we need to invest in them whenever possible. We are looking to employ more apprentices in the coming years as part of our succession planning and to give them the opportunities that we have had to become valued members of our community. I wish Dominic and Regan all the best for their roles in the future wherever that may take them."

PhD Success

Abdulrazag ALGAMUDI
Supervisors: Prof Rami Qahwaji, Dr S Ipson

Halimatu ABDULLAHI
Supervisors: Prof Raed Abd-Alhameed

Awesar HUSSAIN
Supervisors: Dr Jaan Pu, Prof Yakun Guo

Robert NORVILL
Supervisors: Prof Irfan Awan, Dr Andrea Cullen

Hanady ALMAHMOOD
Supervisors: Prof A Ashour, Dr Therese Sheehan

Congratulations!

Early Career Research Seminar (ECRF):

Dr Doanh Luong (pictured on the left above) presented his work on 'Traffic-aware Dynamic Controller Placement using AI techniques in SDN-based aeronautical networks'.
The forum discussed the plans for the new year: forum structure, bidding plans and outreach events.

Our next meeting is on 20 January 2021, 12 noon.
The FLS ECR Forum on 28th Jan at 12.00-14.00 has as guest Sonia Jenkins from WTUN (https://www.wtu-n.net/delegates/mrs-sonia-jenkins/).

Staff and Students' news

Dr Kulvinder Panesar and Prof Hassan Ugail host the Research Seminar Series

The Centre for Visual Computing (CVC) are delivering a Research Seminar Series (RSS) in the academic year 20-21, which is hosted and co-ordinated by Dr Kulvinder Panesar supported by the Director of CVC - Professor Hassan Ugail. The aim of the RSS is to attract research collaborations, disseminate research development work, bring academic and business worlds closer, and encourage PhD applications to UoB - both nationally and internationally. Our first CVC research seminar took place on Thursday 22nd October when Dr Mai Elshehaly (CS) talked about 'Visual Analytics for Health and Care?'. On 19th November - Dr Steve Shnyder (FoLS) told us about his research in 'Preclinical screening of new cancer therapies'. The 3rd seminar on 26th November brought us Dr Peter Branney (FoMLSS) and Dr Emma Norris (Brunel University) who shared with us the knowledge in: "Using the Nonadoption, Abandonment, Scale-Up, Spread and Sustainability (NASSS) framework to extend an AI synthesis system for behaviour change research". The 4th seminar this year took place on 3rd of December and had a protagonist Professor Paul McKevitt, Ulster University, Northern Ireland who introduced us to 'Programming Human-Computer Empathy (HCE)'. On 10th December Dr Akbar Sheikh Akbari, Leeds Beckett University talked about 'Image Colour Constancy Adjustment Techniques'.

RM4L TEAM

Loaded | Unloaded | PET tendon triggered

EPSRC RM4L publishing ground breaking research

Prof John Sweeney is leading the Bradford component of the prestigious EPSRC RM4L project with Cambridge, Cardiff, and Bath Universities. The Bradford team including Dr Cristina Tuinea-Bobe and Mr Glen Thompson recently published, in collaboration with Cardiff University, two papers highlighting the project's ground-breaking research using shape memory polymers. More here: https://rm4l. com/wp-content/uploads/2020/01/RM4L-Newsletter-4_light-version.pdf 10.1016/j.engstruct.2020.111330 10.1016/j.cemconcomp.2020.103757