FET RESEARCH NEWSLETTER

EXTERNAL RESEARCH GRANTS SECURED (THRESHOLD: £10K)

ARI

£30k allocated to LJMU, Telescope Beam Simulator, **Prof. Iain Steele**. STFC, Jul. 2018 – Mar. 2019.

Computer Science

£34k allocated to LJMU, IoT Standardisation, **Dr. Gyu Myoung Lee**. ETRI Korea, Apr. – Nov. 2018.

£176k allocated to LJMU, Immersive Interactive KTP, **Dr. Martin Hanneghan**. Innovate UK, Aug. 2018 – Jul. 2020.

£176k allocated to LJMU, Rapid Prototyping Systems KTP, **Dr. Chris Carter** and **Dr. David Tully**. Innovate UK, Sep. 2018 – Aug. 2021.

EEE

£21k allocated to LJMU, EPSRC Challenge Network in Power Electronics: Feasibility Projects, **Dr. Obrad Dordevic**. EPSRC, Oct. 2018 – Mar. 2019.

LOOM

$20k allocated to LJMU, Cybersecurity in the maritime industry, **Dr Chia-Hsun Chang**. International Association of Maritime Universities, 2019 – 2020.

£99k allocated to LJMU, ANTI-SLIP: A study on using Network Rail's and train borne information to anticipate and mitigate the impact of slippery rail, **Dr. Trung Thanh Nguyen** (PI), **Mr. Igor Deplano**, **Dr. Charly Lersteau** and **Dr. Qian Zhang.** LJMU as the lead partner for the grant of £123k, Rail Safety and Standards Board, 2019-2020.

£140k allocated to LJMU, Rotorcraft Certification by Simulation (RoCS), **Dr. Linghai Lu**. LJMU as a partner of the grant of €3m. EU Clean Sky 2, European Aviation Safety Agency, Jan. 2019 – Dec. 2021.

€480k allocated to LJMU, EMPORIA4KT: Innovative Technology and Knowledge Transfer for Blue Economics, **Prof. Zaili Yang, Dr. Ana Armada Bras, Dr. Zhuohua Qu, Dr. Chia-Hsun Chang, Dr. Christos Kontovas,** and **Prof. Jin Wang**. LJMU as a partner of the grant of €2.54m funded by EU through EU Interreg Atlantic Area, 2019-2022.

AWARDS/PRIZES/KEYNOTE ADDRESSES (AT RECOGNISED INTERNATIONAL CONFERENCES)

(ARI) **Dr. Marco Lam** has been awarded 2nd prize in the Hackathon at the 28th Annual International Astronomical Data Analysis Software & Systems Conference (ADASS), 11 – 15 November 2018, Maryland, USA. **Dr. Ross McWhirter** and **Dr. Joshua Veitch-Michaelis** were awarded 3rd prize. The projects were respectively titled, 'Drag and Drop Ensemble Photometry' and 'Automated periodogram selection using machine learning'.

(BEST) PhD student Ms. Ilaria Frau has been awarded 1st prize in the Sensors for Water Interest Group (SWIG) Early Career Researcher Prize. The competition was hosted at the Water, Wastewater and Environmental Monitoring Conference and Water Exhibition (WWEM 2018), 21-22 November 2018,

Telford, UK. Ilaria's poster was titled 'Microwaves and Functional Materials: a Novel Method to Continuously Detect Zinc Ions in Water'.

(Computer Science) **Dr. Hoshang Kolivand** delivered a keynote speech on "Augmented/Virtual Reality and New Technology" at the 3rd International Conference on New Trends in Information & Communications Technology Applications 2 - 4 October 2018, Baghdad, Iraq.

(LOOM) **Prof. Jin Wang** delivered the opening keynote address titled "Safety and reliability management of large engineering systems" at 2018 10th International Conference on Information Management and Engineering (ICIME 2018) and 2018 International Conference on Information Hiding and

Image Processing ([IHIP 2018](#)), 22 - 24 September 2018, Manchester, UK.

RESEARCH IMPACT GENERATING ACTIVITIES

(BEST) In May 2018 **Dr. Ana Armada Bras** was invited to the Indian Concrete Institute and Visvesvaraya National Institute of Technology (VNIT Nagpur) where she delivered a talk "Performance based design of bio-based composites for retrofitting and refurbishment of the built environment". Dr. Bras was also invited by the Institution of Civil Engineers to become an Associate Editor of the Proceedings of the Institution of Civil Engineers (ICE) Engineering Sustainability journal (impact factor=1.5) with an exposure to 90k ICE members and over 1500 subscribing universities and companies worldwide.

IMPORTANT ITEMS FOR POSTGRADUATE RESEARCHERS INCLUDING PHD COMPLETIONS AND RESEARCH INITIATIVES AT FET

(EEE) **Mr. Marko Slunjski**, a PhD student in the Electric Machines and Drives research group, has been awarded a prestigious student travel grant of $2k by the IEEE Industrial Electronics Society to attend the 44th Annual Conference of the IEEE Industrial Electronics Society [IECON](#), in Washington, DC, 21-23 October 2018. The grant enabled him to attend and present his research work.

INTRODUCTION TO NEWLY APPOINTED RESEARCH ACTIVE MEMBERS

(BEST) **Dr. Dingayo Mzyece** recently joined the Department of Built Environment as Senior Lecturer in Quantity Surveying. Prior to this appointment, he was a Senior Lecturer at Oxford Brookes University; a Lecturer at Coventry University; and a Researcher at the University of Wolverhampton, where he was awarded a PhD in 2015. In 2008, he obtained his MSc from the University of Bath. Now a keen researcher, Dr. Mzyece is interested in research areas/topics related to Construction Health and Safety; Building Information Modelling; Augmented reality; and Construction Procurement aspects such as standard forms of contract and payment practices, among others.

REF UPDATE

A number of FET researchers have been awarded funding via the LJMU REF-upskilling mentoring scheme. The aim of the initiative is to upskill the research base of LJMU by drawing on the talents of our staff: those who are already established researchers (mentors) will gain from further investment into their research area and have the opportunity to demonstrate and further enhance their research leadership, supporting their own career development. Those staff who are currently less research active (mentees) will have the opportunity to gain the skills needed to establish an independent research presence in the future. The following Mentee/Mentor partnerships have been funded from September 2018 to September 2019:

Dr. Ali Rostami (mentee)/**Prof. Mike Riley** (mentor), £5k, Risk management in floating windfarms.

Prof. Andrew Newsam/**Dr. Matt Darnley**, £5k, The exploration of Liverpool telescope time domain data of classical nova explosions.

Dr. Andrew Simpson/**Dr. Po Yang**, £4k, Developing an adaptive framework for next generation of VR Exposure Therapies for personalized treatment of phobias.

Dr. Aseel Hussien/**Dr. Ana Armada Bras**, £5k, A BIM-based approach for bio-based buildings that utilises environmental solutions (IES) in the integrated design for the cost and embodied carbon and energy optimization.

Dr. Cliff Mayhew/**Prof. Dingli Yu**, £13k, Fault Diagnosis for automotive engines and real time simulation.

Dr. Dimitrios Paraskevadakis/Dr. Jun Ren, £3k, Identification of keys skills in developing quality apprenticeships for multimodal logistics: A SERVQUAL and AHP-TOPSIS model for North England.

Dr. Emma Mulliner/Dr. Vida Maliene, £4k, Housing preferences of ageing society.

Dr. Fang Bin Guo/Dr. Zhigang Ji, £3k, RFID-based industrial design for the IoHT Industry.

Dr. Marco Messina/Prof. Ian Jenkinson, £30k, Piezoresistance effect of top-down and bottom-up silicon nanowires.

Dr. Milad Armin/Prof. Jin Wang, £1k, D.R.E.S.S.T.

Dr. Musa Bashir/Prof. Jin Wang, £5k, Identification of weak spots on fixed offshore wind turbine foundation structures for in service monitoring.

Dr. Steven Fowles/Dr. Vida Maliene, £3k, Analysis of stakeholder perceptions for sustainable high streets.

Dr. Sud Sudirman/Dr. Po Yang, £5k, Intelligent plan disease and pest recognition using internet of things and machine learning.

Dr. Tasnim Ahmed/Dr. Carlo Panara (APSS), £5k, Modern dispute resolution: emergence of regulatory frameworks in the EU and within the context of international arbitration.

EXTERNAL COLLABORATION

(BEST) **Dr. Ana Armada Bras** organised an LJMU-NOVA Joint Workshop on Bio-based Building Materials and Construction Techniques, 2-9 June 2018, FCT NOVA University of Lisbon, Portugal . The workshop was led by by Dr. Bras and **Dr. Aseel Hussien**. Dr. Bras also organised a 2 month ERASMUS PhD research course on bio-based construction solutions, testing and optimisation - a partnership between LJMU and NOVA University of Lisbon from May - July 2018. The PhD research course is an opportunity for PhD students to have an international experience and gain additional knowledge on bio-based building materials for energy efficiency and structural durability.

(EEE) **Dr. Christopher Wood** welcomed Hugh Smallman for a 6 month visit to FET. Dr. Xuepeng Zhan of Shandong University, China, joined **Dr. Zhigang Ji** for a 3 month collaboration. **Dr. Fang Bin Guo** welcomed Ban Du of Industrial Design Luxun Academy of Arts (LAFA), China, for 5 months.

(GERI) **Prof. Xun Chen** is hosting 4 visitors from USST (University of Shanghai for Science and Technology), China. Kangshun Li; Yulun Chi; Zhang Wen, and Haoyang Cao are based in GERI for 1 month. Prof. Chen has also welcomed a group of visitors from Shanghai Machine Tool Works Ltd for 1 month: Zhili Xie; Mei Qian; Haiwen Shen; Hualin Qian; Yu Chen, and Dong Li.

(LOOM) **Prof. Ahmed Kamal Ariffin** from National University Malaysia (UKM) has been visiting LJMU to work on a project "A New Model of Fatigue Uncertainty for Additive Manufacturing Materials" in collaboration with **Dr. Lisa Li** and **Dr. Glynn Rothwell** since October 2018. His research visit of 2 months at LJMU is funded by an EU H2020 Marie Curie RISE Project RESET (grant ID: 730888).

LOOM members also hosted a number of other visitors. **Prof. Zaili Yang** hosted Zhenliang Cai, Zhen Li, Prof. Yuhong Wang, and Prof. Chenghua Li of Ningbo University, China for 4 days in September. Also from China, Dr. Qing Yu of Wuhan University of Technology commenced a 12 month collaborative visit with **Dr. Chia-Hsun Chang**. In October, **Dr. Musa Bashir** and **Dr. Milad Armin** welcomed Prof. Kamal Mohd Ihsan of Mahidol University, Thailand, for 10 days. **Dr. Lisa Li** and **Dr. Glynn Rothwell** hosted Prof. Kamal Mohd Ihsan of University Kebangsaan Malaysia.

NOTABLE PUBLICATIONS

(ARI) **Davies, B**. & Dessart, L. (2018) "The surface abundances of Red Supergiants at core-collapse", *Monthly Notices of the Royal Astronomical Society*, sty3138, <u>DOI</u>.

(Computer Science) Lv, F., Zheng, X., **Zhao, F.**, Wang, J., Yue, S., Wang, Z., Cao, W., He, Y., Zhang, C., Jiang, H. & Wang, Z.

(2018) "A power scalable 2-10 Gb/s PI-based clock data recovery for multilane applications", *Microelectronics Journal*, vol. 82, pp. 36-45, <u>DOI</u>.

(EEE) **Chai, Z., Freitas, P., Zhang, W., Hatem, F., Zhang, J. F., Marsland, J.,** Govoreanu, B. Goux, L., and Kar, G.S.

(2018) "Impact of RTN on Pattern Recognition Accuracy of RRAM-Based Synaptic Neural Network", *IEEE Electron Device Letter*, Vol. 39, No. 11, pp.1652-1655, 2018, DOI.

(LOOM) **Fan, S., Zhang, J., Blanco-Davis, E., Yang, Z., Wang, J.** and **Yan, X**. (2018) "Effects of seafarers' emotion on human performance using bridge simulation", *Ocean Engineering*, Vol. 170, pp.111-119, DOI. This is an outcome by a dual PhD between LJMU and Wuhan University of Technology (WUT) China and financially supported by LJMU, WUT, and EU Marie Curie RISE project RESET (grant ID: 730888).

OTHER ITEMS

(ARI) **Prof. Andy Newsam** and PhD student **Mr. Adrien Thob** were invited to speak at the Stargazing event held at the World Museum Liverpool on the evening of 9 November. Visualisations were used in the planetarium, which Adrien had rendered out of cosmological simulations.

£2k allocated to LJMU, Uncooled microbolometer arrays for ground based astronomical instrumentation, **Prof. Iain Steele** and **Ms. Maisie Rashman.** Funded by the Royal Astronomical Society, 2018.

(EEE) **Prof. Emil Levi** visited Bangkok, Thailand in September 2018 under the auspices of the Distinguished Lecturer Progamme of the IEEE Power and Energy Society (PES). He delivered two lectures, "Integrated on-board battery chargers for electric vehicles" within the IEEE PES and TNC Cigre Seminar in the Vayupak Convention Center, and "Multiphase Machines: Types, Applications, Modelling and Control" at the Faculty of Engineering, Chulalongkorn University.

(LOOM) £7.5k allocated to LJMU, Risk evaluation of maritime autonomous surface ships in the UK, **Dr. Chia-Hsun Chang, Prof. Zaili Yang,** and **Dr. Christos Kontovas**. Funded by CILT, 2018 – 2019.

FET RESEARCH NEWSLETTER

EXTERNAL RESEARCH GRANTS SECURED (THRESHOLD: £10K)

<u>EEE</u>

£110k allocated to LJMU, True random number generator (TRNG) MVP for RFID tags in healthcare, **Dr. Zhigang Ji** (PI), **Dr. Bo Zhou,** Dr. Alison Hardy and **Dr. Fang Bin Guo.** Innovate UK, Sep. 2018 – Jan. 2019.

£199k allocated to LJMU, What aspects of participatory design can help urban revitalisation; in particular in the restructuring of former industrial zones in China, **Dr. Fang Bin Guo** (PI), Dr. Emma Roberts and Mr. Jon Spruce (APSS). AHRC/Newton Fund, Oct. 2018 – Oct. 2021.

<u>LOOM</u>

€149k allocated to LJMU, SKILSEA: Futureproof Skills for the Maritime Transport Sector, **Dr. Robyn Pyne** (PI), **Prof. Ian Jenkinson, Dr. Dimitrios Paraskevadakis** and **Barbara Kelly.** Erasmus+ Sector Skills Alliances in vocational education and training, 2019-2022.

AWARDS/PRIZES/KEYNOTE ADDRESSES (AT RECOGNISED INTERNATIONAL CONFERENCES)

(Applied Mathematics) **Prof. Paulo Lisboa** presented a keynote address entitled "AI2.0: Augmented Intelligence" at the International Conference on Data Science and Knowledge Engineering for Sensing Decision Support (FLINS 2018), Belfast, 21-24 August 2018.

(EEE) **Prof. Emil Levi** has received the "Professor Istvan Nagy Award" from the Power Electronics and Motion Control (PEMC) Council with the citation "For his internationally recognised research in the areas of multiphase electric machine and power electronic converter modelling and control". This is the highest award of the PEMC Council and it was presented at the IEEE PEMC conference in Budapest, Hungary, August 2018.

(MEMARC) **Prof. Ian Jones** delivered a keynote address "A Spin on Elastic Metamaterials" at the European Mechanics Society's European Solid Mechanics Conference in Bologna, 2-6 July 2018.

(PROTECT) **Dr. Hoshang Kolivand** delivered a keynote speech on "Virtual and Augmented Reality: Future Directions" at the 12th International Conference on E-learning and Games, Edutainment 2018 in Xi'an, China, on 28-30 June 2018.

RESEARCH IMPACT GENERATING ACTIVITIES

(EEE) The National ICT Research Center in Malaysia has adopted Reliability Methodology and Modelling developed by **Dr. Zhigang Ji** and **Prof. Jian Zhang**. A new strategic collaboration involving Graphene-based nanotechnology has been established, with both parties committing to a NDA to underpin future knowledge transfer and student exchange.

Dr. Zhigang Ji has delivered an invited talk on hardware security to the world-leading semiconductor company, Intel.

(LOOM) **Dr. Trung Thanh Nguyen**, **Igor Deplano, Dr. Charly Lersteau** and **Dr. Qian Zhang** presented proofs of concept incorporating data analytics and operational research using industry data, to the Rail Safety and Standards Board, Merseyrail, and Network Rail. It is the basis of future work to be developed by FET in collaboration with the rail industry.

IMPORTANT ITEMS FOR POSTGRADUATE RESEARCHERS INCLUDING PHD COMPLETIONS AND RESEARCH INITIATIVES AT FET

(BEST) PhD researcher **Samuel Ryecroft** won second prize in the Best Presentation category at the [DESE Conference](), Cambridge, 2nd – 5th September 2018.

INTRODUCTION TO NEWLY APPOINTED RESEARCH ACTIVE MEMBERS

(APM) **Dr. Gabriela Czanner** recently joined the Department of Applied Mathematics as a Senior Lecturer, having previously worked as a Lecturer at the University of Liverpool since 2011. She is a Chartered Statistician of Royal Statistical Society, has an MSc in Mathematics, Computing, Statistics and Probability from the University of Comenius, Slovakia; and an MA in Economics and PhD in Statistics from the University of Pittsburgh, USA. Her research aims to broaden the understanding of diagnosis and progression of diseases, towards personalised medicine, using methods of statistical modelling, image processing, shape modelling, design and analysis of complex datasets and observational longitudinal studies. She is a member of the Ophthalmology Specialty working group for the National Institute for Health Research, an associate editor for statistics of three journals, and a member of EPSRC Peer Review Associate College.

(BEST) **Dr. Tasnim Ahmed** has joined the Real Estate team in the Department of Built Environment. A law specialist, she has taught across the legal spectrum, including business, property, employment and international law. She completed her LLM and PhD at the University of Manchester, where her thesis was on the subject of EU Law and Governance. An active researcher, one of her current interests is exploring the teaching of law to students studying non-law subject areas.

Dr. Michaela Gkantou has joined the Department of Civil Engineering as a Lecturer. She received her MEng in Civil Engineering from Aristotle University of Thessaloniki, Greece, and her MSc on the design of steel structures from University of Naples Federico II, Italy. She was awarded her PhD on the nonlinear response of high strength steel structures from the University of Birmingham in 2017, where she was also employed as a Research Fellow. Her principal research interests focus on the response and design of high strength steel, stainless steel, aluminium and prestressed steel structures at cross-sectional, member and system level. She has expertise in structural testing and finite element modelling. Additional research interests include wind energy structures, topology optimisation and life cycle assessment.

Dr. Tom Kauko joined the Department of Built Environment in September 2018. Tom's academic career has focused on real estate, planning and urban affairs. His research covers strategic urban real estate issues including market structure and dynamics, valuation, sustainability, urban renewal, resilience and innovations, as well as related spatial development and town planning issues. He was awarded an MSc (Land Surveying) from Helsinki University of Technology in 1994, and a PhD (Geography) from Utrecht University in 2002. He has worked for the OTB Research Institute for Housing, Urban and Mobility Studies, Delft University of Technology; the Norwegian University of Science and Technology – NTNU; Oxford Brookes University; and the University of Portsmouth. He is an Associate Expert of the United Nations Economic Commission for Europe (UNECE),), one of the specialists on the Real Estate Market Advisory Group (REM) since 2010, which assists the UNECE Working Party on Land Administration.

(EEE) **Dr. Yongqiang Qiu** recently joined the Department of Electronics and Electrical Engineering as a Lecturer. He received his BEng degree from Tianjin University, China, and MSc and PhD degrees from the University of Dundee. Prior to joining LJMU, he worked as a postdoctoral researcher at the University of Dundee and the University of Glasgow, and as a visiting scholar at the Pennsylvania State University, USA. His research interests focus on the development of miniaturised ultrasonic sensors and devices for medical and industrial applications, particularly in ultrasound imaging and therapy, acoustic tweezing, piezoelectric energy harvesting and wireless power delivery.

(LOOM/MEMARC) **Dr. Xiaoxiao Liu** has recently started her academic career as a Lecturer in the Department of Maritime and Mechanical Engineering. She joined in LJMU in 2016 as a postdoctoral researcher in the Engineering and Technology Research Institute, where she worked on various projects in surface engineering and abrasive technologies. Dr. Liu was awarded her PhD in 2013 from the University of Sheffield with a focus on bio-tribology. Before joining LJMU,

she worked as a postdoctoral researcher at the School of Engineering and Digital Arts, University of Kent. Her principal research interests include manufacturing process optimisation, materials characterisation and abrasives technology, tribology and sports engineering, as well as their applications in industrial problems.

(MEMARC) **Dr. Sam Tammas-Williams** has joined the Department of Maritime and Mechanical Engineering as a Lecturer in materials and advanced manufacturing. His background is in the additive manufacture of metal components. He gained his PhD in this area from the University of Manchester in 2015, and then worked in the EPSRC Future Manufacturing Hub in Manufacture using Advanced Powder Processes (MAPP) at the University of Sheffield. His research interest lies in better understanding the links between manufacturing and performance of metallic components. He is keen to test the capabilities of the LJMU's new additive manufacturing equipment.

(PROTECT) **Dr. Fawaz Ghali** recently joined the Department of Computer Science as a Senior Lecturer. Dr. Ghali joins from Manchester Metropolitan University where he secured a research accelerator grant, which led to the development of [Bioliner](). His research interests include bioinformatics, proteomics and proteogenomics, in addition to big data and data science. He has published more than 30 articles, including a research [paper]() in Genome Biology. He spent 8 years at the University of Liverpool working in the Institute of Integrative Biology. He is also the lead developer and first author of [ProteoAnnotator](). Dr. Ghali holds a PhD in Computer Science from the University of Warwick. In addition to academia and research, he worked in industry for more than a decade and was certified as a Scrum Master (the facilitator for an agile development team) in July 2018. In his free time, he is an active volunteer at [Code Club]().

REF UPDATE

Research England has released [key documents]() pertaining to REF2021 in draft form and is consulting the sector on aspects of the content:

- Guidance on Submissions
- Panel Criteria and Working Methods
- Guidance on Codes of Practice

The University will respond to the consultation by 15 October 2018 and you are encouraged to send any comments you may have on these documents to Dr. Diana Leighton (d.j.leighton@ljmu.ac.uk) **by Monday 8th October 2018**.

The Research Excellence Team is holding an away-day for researchers who are leading impact cases that have the potential to be submitted to REF2021. The event will take place on the **morning of Tuesday 20th November**. Further details and invitations will be issued by Lucy Day, LJMU Impact Officer (l.j.day@ljmu.ac.uk). **If applicable, do hold this date.**

EXTERNAL COLLABORATION

(ARI) **Prof. Chris Collins** welcomed Dr. Kelvin Lee of the University of California, Davis, USA, who will be visiting until April 2019.

(EEE) Ornella Stiscia, an MSc student at Politecnico di Torino, Turin, Italy, joined the department for a 6-month visit hosted by **Prof. Emil Levi.**

(GERI) Prof. Shuwen Wang and Dr. Chen Jiang of the University of Shanghai for Science and Technology (USST) visited GERI during July and August as a continuation of a collaboration programme.

(MEMARC) **Dr. Dan Stancioiu** welcomed Prof. Shahrum Abdullah of Malaysia Universiti Kebangsaan for a 2- month visit.

(PROTECT) In July 2018, **Prof. Dhiya Al-Jumeily** welcomed Dr. Mani Puthuran and Dr. Arun Chandran of the Walton Centre NHS Foundation Trust to begin a 3-year collaboration.

Prof. Woo Seop Rhee of Hanbat National University (HNU), Korea, joined PROTECT for a 1-year visit hosted by **Dr. Gyu Myoung Lee**.

NOTABLE PUBLICATIONS

(ARI) **Copperwheat, C.** and **Steele, I.** (2018) "Multimessenger observations of a flaring blazar coincident with high-energy neutrino IceCube-170922A", *Science,* 12 July 2018, DOI. This collaboration used the Liverpool Telescope as part of an international programme that identified a neutrino of extragalactic origin that was originally detected by the South Pole IceCube neutrino observatory. LT spectroscopy helped show the neutrino detection was associated with a flare from the gamma-ray blazar TXS 0506+056. This is the first ever confirmed detection of an extra-galactic neutrino.

(BEST) **Shanbara, H. K., Ruddock, F.,** and **Atherton, W.** (2018) "A viscoplastic model for permanent deformation prediction of reinforced cold mix asphalt", *Construction and Building Materials,* Vol. 186, pp. 287-302, DOI.

(EEE) **Gao R., Ji Z., Zhang J. F., Marsland J.**, and **Zhang W**. (2018) "As-grown-Generation Model for Positive Bias Temperature Instability", *IEEE Transactions on Electron Devices*, Vol. 65, No. 9, pp.3662-3668, DOI.

(LOOM) **Yazdani, D., Nguyen, T.T.**, and Branke, J. (2018) "Robust optimization over time by learning problem space characteristics", *IEEE Transactions on Evolutionary Computation*, DOI. This is an output of two projects awarded via the Newton Fund Institutional Links and Research Collaboration Programmes.

(PROTECT) **Baker, T.** (2018) "BotDet: A System for Real Time Botnet Command and Control Traffic Detection", *IEEE Access,* Vol. 6. DOI. This is an outcome from a collaboration with researchers from Durham University, Manchester Metropolitan University, and Bahria University of Pakistan, which was part-funded by the FET Pump Priming scheme 2017-18.

OTHER ITEMS

(Applied Mathematics) **Prof. Paulo Lisboa** was the 15th co-chair of CIBB2018 : International Conference on Computational Intelligence methods for Bioinformatics and Biostatistics, Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica, Portugal, 6-8 September.

(EEE) **Prof. Emil Levi** has been appointed as the Editor-in-Chief of the *IEEE Transactions on Industrial Electronics* for a three-year term, which will run from January 2019 until December 2021.

(GERI) **Prof. Mike Morgan** has been appointed to the Editorial Board of the international journal *Inventions*, section: "Inventions and innovation in Advanced Manufacturing" indexed by DOAJ and Inspec (IET), for a two-year term.

FET RESEARCH NEWSLETTER

EXTERNAL RESEARCH GRANTS SECURED (THRESHOLD: £10K)

ARI

£20k allocated to LJMU, "PATT-linked" grant for travel and subsistence, **Dr. Toby Moore**. STFC, 2018 - 2020.

BEST

£142k allocated to LJMU, KTP with Beverston Engineering, **Dr. Badr Abdullah** (PI), **Dr. Muhammad Ateeq** and **LCR4.0**. Innovate UK, 2018 - 2021.

EEE

£16k allocated to LJMU, Market validation of True random number generator (TRNG) for secure communications in the era of IoT (Phase 2), **Dr. Zhigang Ji** (PI)**, Dr. Bo Zhou** and Dr. Alison Hardy. Innovate UK, May 2018 – Jul. 2018.

£373k allocated to LJMU, Variability-aware RRAM PDK for design-based research on FPGA/neuro computing, **Prof. Weidong Zhang** (PI)**, Prof. Jian Zhang** and **Dr Zhigang Ji**. EPSRC, 2018 - 2021.

GERI

€43k allocated to LJMU, Deep 3D Ultrasound Signal Processing, **Prof. Dave Harvey**. EU, TETRAMAX-BILATERAL-TTX-1, Sep. 2018 - Aug. 2019.

LOOM & MEMARC

£30k allocated to LJMU, Royal Academy of Engineering Visiting Professor in Safety and Engineering Risk Management, **Dr. Ben Matellini** (PI) and **Prof. Jin Wang**. Royal Academy of Engineering, 2018 - 2021.

£55k allocated to LJMU, Cycling safety analysis (Phase 2), **Prof. Zaili Yang** (PI), **Prof. Jin Wang, Dr. Zhuohua Qu, Dr. Trung Thanh Nguyen**. DfT Cycling and Walking Funds, Sep. 2018 - Aug. 2019.

€175k allocated to LJMU, ENHANCE – Research network on human reliability analysis and training, **Prof. Zaili Yang** (PI), **Dr. Zhuohua Qu, Prof. Jin Wang, Prof. Ian Jenkinson** and Prof. Stephen Fairclough. H2020 MSCA RISE, 2019 - 2023.

€175k allocated to LJMU, Integrated Modelling of DSS, **Prof. James Ren.** Prof. James Ren as the coordinator for the grant of €504k funded via H2020 MSCA RISE, 2019 - 2023.

€299k allocated to LJMU, REMESH - Research Network on Emergency Resources Supply Chain, **Dr. Jun Ren** (PI), **Prof. Jin Wang, Dr. Trung Thanh Nguyen, Dr. Christos Kontovas** and **Dr. Sean Loughney**. Dr. Jun Ren as the coordinator for the grant of €504k funded via H2020 MSCA RISE, 2019 – 2023.

PROTECT/Computer Science

£30k allocated to LJMU, Match-funded PhD, **Dr. Po Yang** (PI)**, Prof. Qi Shi** and **Dr. Atif Waraich**. LJMU PhD Scholarship Matched-Funding Scheme with Ant Data Ltd, 2018 - 2021.

£318k allocated to LJMU, Intelligent System for Data Mining KTP with Living Lens, **Dr. Abir Hussain**. Innovate UK, 28 months from 2018.

AWARDS/PRIZES/KEYNOTE ADDRESSES (AT RECOGNISED INTERNATIONAL CONFERENCES)

(APM) **Prof. Paulo Lisboa** delivered an invited address at Barcelona Isokinetic Conference at the Nou Camp, Barcelona, on 4 June 2018.

(ARI) **Dr. Claire Burke** has been awarded the Daphne Oram Award Lecture for Digital Innovation by the British Science Association in recognition of her interdisciplinary work in astro-ecology, where she applies techniques from astrophysics to help further the field of conservation ecology. The award also recognises her public engagement work.

(BEST) **Dr. Vida Maliene** delivered a keynote address "Multifunctional Land Use and Decision Making for

Sustainable Rural Development" at the 8th International Scientific Conference "Rural Development 2017, Bioeconomy Challenges" on 23-24 November 2017 at Aleksandras Stulginskis University, Lithuania.

Dr. Khalid Hashim received an Honourable Mention from the Association of British Turkish Academics at the 2018 ABTA Doctoral Researcher Awards held at University College London on Saturday, 12 May 2018.

(LOOM) **Prof. Jin Wang** has been awarded the 2017 Royal Institution of Naval Architects (RINA) – Lloyd's Register Maritime Safety Award for Lifetime Achievement, for

improvement of the safety of life at sea and the protection of the maritime environment through novel and improved design, construction and operational procedures.

Prof. Zaili Yang's paper "Application of Bayesian networks in analysing tanker shipping bankruptcy risks", published in the Maritime Business Review, has been selected by the editorial team as Highly Commended in the 2018 Emerald Literati Awards.

(PROTECT) **Dr. Po Yang** delivered an invited keynote address on "Internet of Things enabled Physical Activity Data Validation and Utilisation in Health Applications" at the Gordon Research Conference (GRC) "Advanced Health Informatics", Hong Kong, 17-22 June 2018. The GRC is a world-renowned organisation that brings together leading scientists from all over the world to engage in a dialogue and discussion on unpublished research work.

Dr. Thar Baker delivered a keynote speech on "Everything-as-a-Resource (*aaR) paradigm: Foundation and illustration through the IoTs" at the 2nd International Conference on Future Networks & Distributed Systems (ICFNDS), Amman, Jordan, 26-27 June 2018.

RESEARCH IMPACT GENERATING ACTIVITIES

(LOOM) Dr. Trung Thanh Nguyen, **Mr. Yannis Ancele** and **Dr. Charly Lersteau** have delivered a bicycle delivery routing solution for industry partner Peloton. The solution will be trialled by Peloton to compare its efficiency with the organisation's current practice.

(LOOM) Dr. Trung Thanh Nguyen, **Dr. Charly Lersteau** and **Mr. Igor Deplano** have delivered a simulation on train movement against timetables to industry partner Merseyrail, together with other visualisation deliverables extracted from raw data, such as network graphs and signal berths locations. This is a proof of concept to demonstrate future work to be developed by FET in collaboration with Merseyrail.

IMPORTANT ITEMS FOR POSTGRADUATE RESEARCHERS INCLUDING PHD COMPLETIONS AND RESEARCH INITIATIVES AT FET

(ARI) **Maisie Rashman** gave a talk and a poster at the international society for optics and photonics (SPIE) meeting (10th – 15 June 2018), to present two recent astro-ecology results. This meeting is the most prestigious international event for astronomical instrumentation. Maisie features in the conference summary on the SPIE website.

(LOOM) **Danial Yazdani** has been awarded a GECCO 2018 Student Travel Grant to support him to travel to the prestigious GECCO conference in Japan in July 2018. Danial has also been supported by the University, FET and the Department of Maritime and Mechanical Engineering for his travel.

(PROTECT) Postgraduate researcher **John Henry** was awarded the best poster award at the IEEE SeGAH 2018 in TU Wien, Vienna, Austria, 16-18 May 2018.

Faculty Research Week took place 14 – 18 May 2018. The event featured a diverse range of keynote speakers and over 150 FET PGRs presented their research through posters, pitches and presentations. The following PGRs received prizes:

Best Potential Impact – Poster
> 1st **Abbie Romano**, BEST (DOS: **Dr. Ana Armada Bras**)
> 2nd **Hande Tokucoglu**, GERI (DOS: **Prof. Xun Chen**)
> 3rd **Anuoluwapo Adewuyi**, PROTECT (DOS: **Prof. Qi Shi**)

Best Poster
> 1st **Abbie Romano**, BEST (DOS: **Dr. Ana Armada Bras**)

> 2nd **Jurgita Banyte**, BEST (DOS: **Dr. Vida Maliene**)
> 3rd **Ali Shubbar**, BEST (DOS: **Dr. Monower Sadique**)

Best Paper
> 1st **Raul Casana Eslava**, APM (DOS: **Dr. Ian Jarman**)
> 2nd **Rebecca Randles**, BEST (DOS: **Prof. Alison Cotgrave**)
> 3rd **Thomas Sedgwick**, ARI (DOS: **Prof. Ivan Baldry**)

Best Elevator Pitch
> 1st **Chantelle Mason**, APM (DOS: **Dr. Steven Webb**)
> 2nd **James Brown**, EEE (DOS: **Dr. Zhigang Ji**)
> 3rd **Kirsty Taggart**, ARI (DOS: **Dr. Daniel Perley**)

Best Oral Presentation
> 1st **Cameron Kelly**, LOOM (DOS: **Dr. Eddie Blanco Davis**)
> 2nd **Terry Allen**, APM (DOS: **Dr. Steven Webb**)
> 3rd **Egidijus Kukstas**, ARI (DOS: **Dr. Ian McCarthy**)

Dean's Prize for Best PhD Thesis 2018:
> **Dr. Carl Chalmers**, PROTECT (DOS: **Dr. William Hurst**)
> **Dr. Sean Loughney,** LOOM (DOS: **Prof. Jin Wang**)
> **Dr. Khalid Hashim,** BEST (DOS: **Prof. Andy Shaw**)
> **Dr. Ivan Zoric**, EEE (DOS: **Dr. Martin Jones**)
> **Dr. Hassnen Jafer,** BEST (DOS: **Dr. Bill Atherton**)

INTRODUCTION TO NEWLY APPOINTED RESEARCH ACTIVE MEMBERS

(LOOM) The Faculty welcomes **Dr. Charly Lersteau** and **Mr. Igor Deplano** who have recently joined us as a research fellow and research associate, working with **Dr. Trung Thanh Nguyen** and **Dr. Qian Zhang** on data analytics and optimization for rail networks, as part of a project funded by the UK Rail Standards and Safety Board 2018-2019.

(BEST) **Dr. Kunal Kansara** recently joined the Department of Civil Engineering as a Senior Lecturer. He is a Chartered Engineer and received his PhD from the University of Bath. Kunal started his career in India as Lecturer and from 2003-09 worked at the Structural Engineering Research Centre, India. Since 2013, he has worked as a Sessional Lecturer at the University of West of England, and a Principal Engineer and Divisional Manager for Mouchel Ltd. Kunal's research and professional work aims to broaden understanding of structural systems, mechanics, materials and design processes through analytical, computational and lab- and field-based experimental investigations. Kunal is a technical member of the American Concrete Institute's committee ACI440 and the International Federation of Structural Concrete (fib) Commission 3, where he contributes towards the development of standards for structural design, assessment and rehabilitation. He is also a Technical Reviewer for the ACI's Structural and Materials Journals, and has been a Visiting Researcher at the Hong Kong Polytechnic University and the University of Stuttgart.

EXTERNAL COLLABORATION

(Applied Maths) Ms. Disha Agarwal from Manipal Institute of Technology, India joined **Prof. Paulo Lisboa** for a 2-month collaborative visit.

(BEST) **Prof. Mike Riley** welcomed Mr. Yash Mittal of the School of Planning and Architecture, India for a 6-week visit.

(EEE) The Electric Machines and Drives research group welcomes two new visitors for a 3-month stay. **Prof. Emil Levi** and **Dr. Obrad Dordevic** will host Miss Cristina Martin Torres of University of Seville, Spain, and Mr. Mario Bermudez Guzman of University of Seville, Spain, and Ecole des Arts et Metiers Campus de Lille, France.

(GERI) Mr. David Laborde of Grenoble INP Phelma, France, is working with **Prof. Xun Chen** until July.

Prof. Yogesh Bhalerao of MIT Academy of Engineering, Dehu Phata Alandi, Pune, India visited **Prof. Mike Morgan** for 1 month.

(LOOM) **Dr. Trung Thanh Nguyen, Dr. Qian Zhang, Mr. Igor Deplano** and **Dr. Charly Lersteau** have started working with a number of partners from the rail industry (Merseyrail, RSSB, Network Rail) and the Met Office to tackle the problems of reactionary delays in rail transport.

LOOM has welcomed a number of research visitors. Mr. Van Truong Vu will work with **Dr. Trung Thanh Nguyen** on evolutionary computation as part of a project funded by the Newton Fund and NAFOSTED. Mrs. Orawan Mokkhavas of Mahidol University, Thailand, has joined the LOOM team for a 5-month stay hosted by **Dr. Eddie Blanco Davis**. **Dr. Musa Bashir** and **Dr. Milad Armin** welcomed Dr. Wonsiri Punurai, also from Mahidol, for a 3-week visit. Miss. Huanhuan Li of Wuhan University of Technology, China, arrived for a one year visit hosted by **Prof. Zaili Yang**.

(MEMARC) **Prof. James Ren** welcomed two visitors from the University of Phayao, Thailand. Asst. Prof. Anurak Prasatkhetragarn and Asst. Prof. Dr Arrak Klinbumrung commenced a 2-month visit on 1st May 2018.

(PROTECT) **Dr. Sud Sudirman** hosted Ms. Nunik Afriliana and Dr. Natalia Friska of Universitas Multimedia Nusentara, Inonesia, for a 5-day visit in June 2018.

NOTABLE PUBLICATIONS

(EEE) **Brown, J., Gao, R., Ji, Z., Chen, J., Wu, J., Zhang, J., Zhou, B., Shi, Q., Crowfold, J.,** and **Zhang, W.** (2018). "A low-power and high-speed True Random Number Generator using generated RTN," *IEEE Symposium on VLSI Technology* (VLSI-T) 2018. (ISBN: 978-1-5386-4218-4).

(LOOM**)** Li., C, **Nguyen T. T.,** Wu, M., Yang, M., and Zeng, S. (2018). "An Open Framework for Constructing Continuous Optimization Problems," *IEEE Transactions on Cybernetics,* 2018 (IF: 7.4), DOI. This is an output of two projects awarded via the Newton Fund Institutional Links and Research Collaboration Programmes.

(PROTECT) Cao, B., Zhao, J., **Yang, P**., Lv, Z., Liu, X., and Min, G., "3D Multi-Objective Deployment of an Industrial Wireless Sensor Network for Maritime Applications Utilizing a Distributed Parallel Algorithm", *IEEE Transactions on Industrial Informatics*, Early Access, 2018 (IF: 6.764). DOI**.**

OTHER ITEMS

FET staff received a number of awards at University Research Day on Wednesday 20th June:

- Dr. Ian McCarthy (ARI), winner of the Vice-Chancellor's Award for Excellence in Research, Scholarship and Knowledge Transfer.
- Dr. Monower Sadique (BEST), winner of the Early Career Researcher Award for Impact for Delivering Innovative and Impactful Research.

Four LJMU PhD studentship applicants from FET have been successful:

- Szilárd Novoth, DoS: Prof. Dingli Yu (EEE)
- Julien Fischer. DoS: Prof. Wei Zhang (EEE)
- Verónica Torres De Sande, DoS: Dr. Ana Armada Bras (BEST)
- Patrick Riley. DoS: Dr. Sandra Ortega-Martorell (Applied Mathematics).

(ARI) Dr. Stacey Habergham-Mawson has been elected Vice President (Astronomy) of the Royal Astronomical Society. Dr. Habergham-Mawson will hold the position for 2 years and will be a trustee of the RAS (on Council), but will also be one of the officers. The four Vice Presidents cover the committees and grant-making panels of the RAS. Dr. Habergham-Mawson will be using her position to champion early career researchers; outreach and engagement; and equality and diversity, guiding the RAS to a more transparent and inclusive future.

(LOOM) Dr. Dimitrios Paraskevadakis received a £4K research fund from the EU-funded project ST4W – Smart Tracking Data Network for Shipment by Inland Waterway. The research activity involves identifying and interviewing stakeholders that move freight via the inland waterways in North West England, in order to assess current practices in information sharing and standardisation of logistics processes.

(PROTECT) Prof. Abdennour El Rhalibi organised the 12th International Conference Edutainment 2018, 28-30 June 2018 at Xi'an University of Technology, China. Prof. El-Rhalibi was Conference General Chair, supported by an International Programme Committee. Co-located with the Edutainment Conference, Prof. El Rhalibi and Dr. Hoshang Kolivand, together with colleagues in China, organised a British Council-NSFC Newton Researcher Links Workshop on Health and Wellbeing through VR and AR. Prof. El Rhalibi led a delegation of 17 ECRs from UK Universities to meet with 17 ECRs from universities around China. The event organisation was supported by a number of LJMU colleagues including Prof. Ahmed Al-Shamma'a, Lucy Lamb, Laura Bellinger and Suzy Brown.

Faculty of Engineering and Technology
May 2018

FET RESEARCH NEWSLETTER

EXTERNAL RESEARCH GRANTS SECURED (THRESHOLD: £10K)

ARI

£36k allocated to LJMU, Rapid follow-up of young supernovae, **Prof. Paolo Mazzali**. Weizmann-UK Joint Research Programme, 2018-2020.

£44k allocated to LJMU, Leverhulme Foundation Visiting Professorships, **Prof. Nate Bastian** and Prof. Emmanuelle Dalesandro (University of Bologna). Leverhulme Foundation, 4 months, 2018.

£63k allocated to LJMU, WEAVE grant extension, **Prof. Iain Steele.** STFC, Apr. 2018-Mar.2019.

£70k allocated to LJMU, ODA institutional award**, Prof. Chris Collins.** STFC, Apr. 2018–Dec. 2018.

EEE

£16k allocated to LJMU, True random number generator (TRNG) for secure communications in the era of IoT, **Dr. Zhigang Ji, Dr. Bo Zhou** and Dr. Alison Hardy. Innovate UK, Feb. 2018– Apr. 2018.

LOOM

£12k allocated to LJMU, Resilience and risk of offshore wind energy generation platforms under extreme environments, **Prof. Jin Wang (PI), Dr. Musa Bashir, Prof. Zaili Yang and Dr. Sean Loughney**. Royal

Society, 2018-2020. This is a joint project in collaboration with the University of Shanghai for Science and Technology (USST, Prof. Chun Li) funded by the National Natural Science Foundation of China (NSFC).

£86k allocated to LJMU, Anticipating and mitigating reactionary delays – a case study on the Northern line of Merseyrail, **Dr. Trung Thanh Nguyen, Mr. Igor Deplano** and **Dr. Qian Zhang**. LJMU is the lead partner for the grant of £108k funded by the Rail Safety and Standards Board, 2018-2019.

PROTECT/Computer Science

£180k allocated to LJMU, Research on GDPR compliant personal identifiable information management technology for IoT environment, **Dr. Gyu Myoung Lee**. LJMU as the consortium partner for the grant of £1.5m funded by IITP (Institute for Information and Communications Technology Promotion), Korea, 2018-2020.

£212k allocated to LJMU, Liverpool 5G Testbed, **Dr. Atif Waraich**. LJMU as a partner in a total grant of £3.5 m, Innovate UK 5G Testbeds and Trials Programme: Phase 1, 2018-19.

AWARDS/PRIZES/KEYNOTE ADDRESSES (AT RECOGNISED INTERNATIONAL CONFERENCES)

(EEE) **Prof. Emil Levi** delivered a Keynote on "Utilisation of Multiphase Electric Machines in Electric Vehicles" at the IEEE CPE-POWERENG conference in Doha, Qatar in April 2018.

(LOOM) **Prof. Jin Wang** has won the prestigious 2017 Outstanding Contribution to Marine Safety award from the Institute of Marine Engineering, Science and Technology (IMarEST). Prof. Wang received his award at IMarEST's 115th Annual Dinner at London Guildhall on the 16th March 2018.

RESEARCH IMPACT GENERATING ACTIVITIES

(ARI) The **European Week of Astronomy and Space Science** (EWASS 2018) took place at the Arena and

Conference Centre (ACC) in Liverpool from 3-6 April 2018. Involving some 1400 astronomers and space

scientists, it was the largest professional astronomy and space science event in the UK for a decade, with leading researchers from around the world presenting their latest work. News coverage was extensive. The astro-ecology team [featured](#) [on](#) the BBC Six O'Clock News on 3rd April 2018 and in the [New York Times](#).

The 2018 **Merseyside Astronomy Day** took place on 7th April at the World Museum Liverpool to a sell-out audience of students, amateur astronomers and the general public. Featuring speakers from several universities, including LJMU, the talks highlighted current research in astrophysics from "tornadoes" on the Sun to measurements of relativistic jets near supermassive black holes.

(EEE) The Random Number Technology commercialisation project lead by **Dr. Zhigang Ji**, **Dr.** **Bo Zhou** (PROTECT) and Dr. Alison Hardy (Commercialisation) has successfully completed a 6 week value proposition analysis and presentation to a panel of industry experts. DCM/Innovate UK have now invited the team to apply for further funding for Phase 2 (Market Validation). One GB patent application has been filed. In addition, the team has been invited to demonstrate the project at the prestigious VLSI-T conference in Hawaii in June.

(MEMARC) **Dr. Ariyan Ashkanfar**, **Dr. Russell English,** and Prof. Gabor Barton (SCS) are working with The Movement Centre, who work with children who have a disability affecting their movement control, such as cerebral palsy. Together they are leading a project designing a new generation of Targeted Training Therapy, which appears on the [TMC impact review](#).

IMPORTANT ITEMS FOR POSTGRADUATE RESEARCHERS INCLUDING PHD COMPLETIONS AND RESEARCH INITIATIVES AT FET

(EEE) **Mr. Steven Duffy** from the Department of Electronics and Electrical Engineering achieved 1st place in the Merseyside competition for the IET's Present Around The World (PATW). His performance on "Reliability of Gallium Nitride High Power Transistors" won him a £150 prize with entry into the national PATW competition to be held in Glasgow.

(LOOM) **Mr. Igor Deplano** will co-lead an industry-funded project on rail optimization together with **Dr. Trung Thanh Nguyen** and **Dr. Qian Zhang** (EEE). Industry partners include the Rail Safety and Standards Board (RSSB) and Merseyrail.

INTRODUCTION TO NEWLY APPOINTED RESEARCH ACTIVE MEMBERS

(ARI) **Dr. Eamonn Harvey** from the National University of Ireland, Galway, has been appointed Instrument Scientist for the New Robotic Telescope. Dr. Harvey is an experienced observational astronomer. In particular, his work focuses on the observations of transient stellar phenomena, using imaging, spectroscopic and polarimetric techniques on a range of medium sized research class telescopes, including the Liverpool Telescope.

(APM) **Dr. Ivan Olier** joins the Department of Applied Mathematics as a Senior Lecturer in Data Science. He was awarded a PhD in Artificial Intelligence from the Technical University of Catalonia, Spain, in 2008. Since then he has worked as a Postdoctoral Researcher at the Autonomous University of Barcelona and at the University of Manchester, followed by a lectureship in Health Informatics at the University of Keele and in Computer Science at Manchester Metropolitan University. Dr. Olier's expertise is in machine learning and data science. His research interests are in statistical and machine learning modelling of big data, with particular focus on modelling domains and highly structured data (multivariate time series, graphs, networks, *etc*.). He is keen to build new research collaborations.

(PROTECT) **Dr. Hui Fang** joined the Department of Computer Science in April 2018. He received his B.Sc. from Science and Technology University, Beijing, China, in 2000 and Ph.D. from Bradford University, UK, in 2006. Between 2006 and 2015, he worked in a number of postdoctoral research roles at Manchester Metropolitan University, Swansea University and the e-Research Centre, University of Oxford. Since 2015, he has been a Lecturer in the Department of Computer Science of Edge Hill University. His research interests include image processing, facial dynamics analysis, scientific data visualization, visual analytics, pattern recognition and machine learning techniques. He has significant experience of building multi-disciplinary visual analytics

systems, including a VBAS system for the International Seismological Centre, an online colour perception optimization tool and an image statistical visualization system..

REF UPDATE

A change to the initial threshold for impact case studies (ICS) for REF2021 has been announced. Now, Units of Assessment (UOA) comprising up to 19.99 FTE staff will need to return two impact case studies (previously, the threshold was set at 14.99 FTE). One further case study is required to be returned for every additional 15 FTE within the UOA e.g. a UOA with 20 to 34.99 FTE staff requires three ICS, a UOA with 35 to 49.99 FTE staff requires four ICS etc. Full information and the table showing the updated ICS requirements can be found on page 8 of the Decisions document.

Research & Innovation Services is currently seeking expressions of interest for its annual Impact Awards (deadline Friday 1 June 2018). Prizes (£3k for teams, £1.5k for individuals) are awarded across four categories, including 'Enhancing innovation in engineering, technology, science and the environment'. Applicants must represent their research and arising impact(s) in the Impact Tracker platform. Please contact Lucy Day (Impact Officer) for further information l.j.day@ljmu.ac.uk

For further information about the University's preparations for REF2021, please contact Dr. Diana Leighton, Head of Research Excellence and Research Strategy: d.j.leighton@ljmu.ac.uk

(LOOM) **Prof. Jin Wang** has been appointed as a member of sub-panel 12 (Unit of Assessment 12, Criteria Phase, Engineering) in the UK's REF2021. Lists of the REF2021 expert panel members can be found here.

EXTERNAL COLLABORATION

(APM) **Dr. Steven Webb** welcomed Dr. Joseph Leedale of the University of Liverpool for long-term collaboration.

(BEST) **Prof. Anil Sawhney** welcomed Dr. Javier Irazarry of Georgia Institute of Technology. Dr. Irazarry is commencing a 3-year collaboration with LJMU.

(EEE) Miss Marija Vujacic, a PhD student at the University of Bologna, Italy, joined the Electric Machines and Drives research group for a three-month research stay, under the supervision of **Dr. Obrad Dordevic**.

Prof. Emil Levi delivered a one-week course in February 2018, entitled "Multi-phase drive and generation systems for advanced industrial applications", under the auspices of the Global Initiative of Academic Networks (GIAN) of the Government of India at the Visvesvaraya National Institute Of Technology, Nagpur. Prof. Levi was also recently appointed as a Distinguished Lecturer of the IEEE Power and Energy Society and has in this capacity delivered his first lecture at the University of Belgrade, Serbia, in April 2018.

(GERI) **Dr. Guangming Zhang** welcomed Dr Qinghua Mao of Xi'an University of Science and Technology (XUST), China, for a 12-month visit.

(LOOM) **Prof. Zaili Yang** welcomed Prof. Paul Taewoo Lee of Ocean College, Zhejiang University, China. Prof. Lee delivered a Faculty seminar, "Sustainability and Green Port" on 16th April.

Prof. Jin Wang welcomed Mr Yildiz Serdar of the Faculty of Marine Science at Karadeniz Technical University in Trabzon, Turkey, for a 3-month visit.

(PROTECT) **Dr. Bo Zhou** welcomed Dr Jianxin Feng of Dalian University, China, for a 12-month visit.

NOTABLE PUBLICATIONS

(EEE) **Ma, J., Chai, Z**., **Zhang, W.D., Zhang, J.F**., **Ji, Z., Benbakhti, B.**, Govoreanu, B., Simoen, E., Goux, L., Belmonte, A., Degraeve, R., Kar, G.SD., and Jurczak, M. (2018) "Investigation of Preexisting and Generated Defects in Nonfilamentary a-Si/TiO2 RRAM and Their Impacts on RTN Amplitude Distribution," IEEE Transactions on Electron Devices, Vol. 65, No. 3, pp.970-877, DOI.

(LOOM) **Yang Z.S., Yang Z.L.** and Yin J.B. (2018). "Realising advanced risk-based port state control inspection using data-driven Bayesian networks", *Transportation Research Part A: Policy and Practice*, Vol. 110, pp. 38-56, DOI. Introducing a newly-developed risk prediction method for risk-based port state control, it received the MPM Best Paper Award at the International Association of Maritime Economics Conference (2017).

(PROTECT) **Shone, N.,** Vu Dinh, P., Tran Nguyen, N., and **Shi, Q.** (2018). "A Deep Learning Approach to Network Intrusion Detection Computational Intelligence for Cloud Computing", *IEEE Transactions on Emerging Topics in Computational Intelligence*, Volume 2, Issue 1, pp 41-50, DOI.

(GERI) Qi, A., Zhang, G., Dong, M., Ma, H. -W., and **Harvey, D.** (2018). An artificial bee colony optimization based matching pursuit approach for ultrasonic echo estimation. *Ultrasonics*, 88, 1 – 8, DOI.

OTHER ITEMS

FET Researchers have been awarded Global Challenge Research Fund (GCRF) awards as part of LJMU's quality-related research funding (QR) allowance from HEFCE. All awards are to work with a developing country, Apr-Jun 2018:

- (ARI) £6k awarded to **Dr. Helen Jermak**, "Knowledge exchange between the Liverpool Telescope and the Kupang Observatory, Indonesia".
- (ARI) £20k awarded to **Dr. Steven Longmore**, "Tracking wild peat fires in Indonesia" (led by Prof. Serge Wich SCS.
- (PROTECT) £12k awarded to **Prof. Dhiya Al-Jumeily**, "Patient Management System Support by Crowdsourcing Approach for the benefit of Iraqi Hospitals".
- (BEST) £30k awarded to **Dr. Patryk Kot,** "Feasibility study to explore the use of electromagnetic spectroscopy techniques to detect lymphatic filariasis microfilariae in blood", India.
- (EEE) £25k awarded to **Dr. Zhigang Ji,** "Proof-of-principle: Development of more secure wireless medical devices to enable digital healthcare in Malaysia".
- (PROTECT) £12k awarded to **Dr. Sud Sudirman**, "A Feasibility Study into using a Wireless Sensor Network System as a Solution to Detecting Shoal of Fish in the Vicinity of Fish Aggregating Device", Indonesia.

Two experience sharing workshops have taken place in FET in 2018. In February, **Dr. Ian McCarthy** and **Prof. Jin Wang** shared their experience of gaining EU funding. In April, **Dr. Steve Longmore** and **Dr. Guangming Zhang** shared their experience of gaining Research Council funding connected to the UK government's Official Development Assistance (ODA) and Global Challenges Research Fund.

Dr. Zhigang Ji delivered an invited talk on "Predictive As-grown-Generation model for NBTI of advanced CMOS devices and circuits" at the China Semiconductor Technology International Conference, China, 11-12 March 2018.

(LOOM) **Dr. Trung Thanh Nguyen** was one of the organisers of the 21st International Conference on the Applications of Evolutionary Computation, which took place in Parma, April 2018. This is one of the leading conferences in its field. Dr. Nguyen also chaired a conference track (EvoSTOC 2018) and presented a best-paper-award-nominated paper on behalf of the author group (**Mr. D. Yazdani, Dr. T. T. Nguyen,** Prof. J. Branke and **Prof. J. Wang**).

Dr. Dimitrios Paraskevadakis has recently been elected as Fellow Member (FCILT) of the Chartered Institute of Logistics and Transport.

Prof. Zaili Yang, Miss. Tianni Wang and **Mr. Mark Poo** received a travel fund of $4k from the Canadian (Social Science) Research Council (CRC) to attend a CRC-funded climate change workshop, "Climate Change and Adaptation Planning for Ports, Transport Infrastructures, and the Arctic (CCAPPTIA)". Along with the workshop, Prof. Yang has been invited to give a keynote talk entitled "Risk-based Resilience Study of Container Supply Chains" to The Associates of the Asper School of Business.

(PROTECT) **Dr. Feng Zhao** was invited to give a talk on "Thermal imaging-based physiological monitoring" in the 2nd Micius Forum, hosted by USTC, Hefei, China, 12-16 April, 2018. During the forum, he promoted LJMU to researchers in the fields of machine learning, artificial intelligence, big data, and quantum computing, and discussed potential collaborations. He was also interviewed by local media.

Faculty of Engineering and Technology
March 2018

FET RESEARCH NEWSLETTER

EXTERNAL RESEARCH GRANTS SECURED (THRESHOLD: £10K)

ARI
£184k allocated to LJMU, collaborative work with National Astronomical Research Institute of Thailand on telescope control systems, **Dr. Chris Copperwheat, Dr. Robert Smith, Prof. Iain Steele, Dr. Marco Lam, Dr. Andrzej Piascik**. Newton Fund, 2018-2020.

EEE
£16k allocated to LJMU, True random number generator (TRNG) for secure communications of IoT devices, **Dr. Zhigang Ji** and **Dr. Bo Zhou** (PROTECT). Innovate UK Cyber Security Academic Start-up Programme, Feb. 2018–Mar. 2018.

MEMARC
£162k allocated to LJMU, Physical Modelling of Multiple Component Carbides, **Prof. James Ren**. EU Marie Skłodowska-Curie Individual Fellowship, 2018-2020.

PROTECT/Computer Science
£50k allocated to LJMU, Health and Well-being Through VR and AR – Workshop in June 2018 at Xian University, **Prof.**

Abdennour El Rhalibi, Dr. Yuanyuan Shen, Dr. Hoshang Kolivand, in collaboration with Hangzhou Normal University, Zhejiang University, China Academy of Sciences and X'ian University of Technology. British Council and NSF China-funded Newton Fund Researcher Links Workshop Grant, 2018.

£31k allocated to LJMU, Real-time Industrial Monitoring Using Machine Learning Techniques for Predictive and Preventative Maintenance, **Dr. Carl Chalmers, Dr. Paul Fergus, Dr. William Hurst** and **Dr. Michael Mackay**, LJMU Match-Funded PhD scholarship with Central Group PLC, 2018-2021.

BEST
£56k allocated to LJMU, CO: the lived experience, **Prof. Andy Shaw**, Gas Safety Trust, Mar. 2018 – Mar. 2019.

£750k allocated to LJMU, Connecting Innovation for Clean Growth, **Paul Dickson**. HEFCE HEIF: Connecting Capability Fund, Apr. 2018-Mar. 2021.

AWARDS/PRIZES/KEYNOTE ADDRESSES (AT RECOGNISED INTERNATIONAL CONFERENCES)

(PROTECT) Senior Lecturer in Cyber Security and IoT **Dr. Áine MacDermott**, will speak about emerging trends in IoT and addressing security issues at the Digital Government meeting in Belfast on 9th March. In addition, Dr. MacDermott has been invited as the keynote speaker at the Westminster eForum – "Next steps for the Internet of Things – commercial opportunities, service development and connected homes" - on 22nd May in London.

(LOOM) LJMU, via the LOOM Research Institute, has been shortlisted as one of the three finalists for the Mersey Maritime

Innovation Award 2018, to be announced on 8th March. The bid is led by **Prof. Zaili Yang, Dr. Trung Thanh Nguyen, Prof. Jin Wang and Prof. Ian Jenkinson**.

(LOOM) A paper by **Danial Yazdani**, **Dr. Trung Thanh Nguyen**, Juergen Branke and **Prof. Jin Wang** has been nominated for the Best Paper Award at the 21st International Conference on the Applications of Evolutionary Computation (EvoApps 2018) to take place in Parma, April 2018.

RESEARCH IMPACT GENERATING ACTIVITIES

(BEST) **Dr. Patryk Kot** and **Prof. Andy Shaw** delivered a presentation to the Heads of Departments at the Liverpool School of Tropical Medicine, to establish new research

collaborations by implementing sensor technologies to detect symptoms of tropical diseases.

IMPORTANT ITEMS FOR POSTGRADUATE RESEARCHERS INCLUDING PHD COMPLETIONS AND RESEARCH INITIATIVES AT FET

(BEST) On 21st January 2018, Civil Engineering PhD students **Ali Al-Attabi** and Ameer Jebur were awarded the medal of excellence from the Iraqi Ministry of Higher Education and Scientific Research.

The awards were presented at a ceremony at University College London, and were given to PhD students who had published more than 5 journal papers during their period of study.

INTRODUCTION TO NEWLY APPOINTED RESEARCH ACTIVE MEMBERS

(PROTECT) **Dr. Alex Akinbi** has joined the Department of Computer Science as Lecturer in Computer Forensics. Prior to joining LJMU, he was a Lecturer in Cyber Security and Digital Forensics at the University of Salford. He completed his PhD in Computing with a specialism in Cyber Security at Edge Hill University, and has an MSc degree in Information Security. His research interests include Computer Forensics, Cyber Security, Cloud Computing and Computer Vulnerability Research and is currently working on Computer Forensics and Vulnerability research in mobile applications and malware reverse engineering in mobile platforms. He is happy to collaborate with colleagues with similar or complementary research interests.

(BEST) **Dr. Ziad Abdeldayem** has joined the Department of Civil Engineering as a Senior Lecturer. His research interests include the applications of GIS, remote sensing and spatial data analysis in mapping, digital infrastructure, sustainable built environment, flood zone mapping, water resources management, earth sciences, archaeology, environmental studies, forestry, geography, disaster management, agriculture, etc. Ziad is very keen to collaborate with other colleagues and to support the FET research policy.

EXTERNAL COLLABORATION

(ARI) On 18-19 January, ARI hosted LJMU's partners and prospective partners in the 4.0m New Robotic Telescope (NRT) project for a two-day workshop in Liverpool. LJMU staff were joined by representatives from the Instituto de Astrofisíca de Canarias, the National Astronomical Research Institute of Thailand and the National Astronomical Observatory of China to discuss scientific and technical collaboration on the new telescope and draft a Memorandum of Understanding.

Francesca Pina of University of La Laguna, Tenerife, Spain, is visiting ARI from January to March 2018, working with **Dr. Marie Martig**.

(BEST) **Dr. Patryk Kot** and **Prof. Andy Shaw** visited the University of Nice Sophia Antipolis to organize the collaborative international workshop bringing together leaders in the field of 3D reconstruction of cultural heritage, architecture and archaeology as a part of the Horizon 2020 "DigiArt" project.

(EEE) **Marija Vujacic**, a PhD student at the University of Bologna, Italy, commenced her three-month research stay in the Electric Machines and Drives research group.

Prof. Emil Levi delivered a five-day GIAN course on "Multi-phase drive and generation systems for advanced industrial applications" at VNIT Nagpur, India.

(LOOM) **Dr. Dai Hui Zhang** of Dalian Maritime University, China commenced a 12-month research visit to LOOM in January 2018.

(PROTECT) **Dr. Carl Chalmers** and **Dr. Paul Fergus** will be presenting their smart meter research alongside Smart Energy GB at DataFest 2018 in Edinburgh. DataFest18 is a festival of data innovation run by The Data Lab, with events hosted across Scotland from 19th to 23rd March 2018. In addition, their partner company Chameleon at the IBM Think event in Las Vegas, which attracts more than 40,000 visitors, will present the smart meter research. They will showcase the work done in partnership with Mersey Care NHS Trust recognising the progression of severity of Alzheimer's.

NOTABLE PUBLICATIONS

(EEE) **Zoric, I., Jones, M., Levi, E.** (2018) "Arbitrary power sharing among three-phase winding sets of multiphase machines", *IEEE Trans. on Industrial Electronics*, Vol. 65, No. 2, pp. 1128-1139, DOI.

(GERI) Wang, X., **Zhang, G.,** Ma, H., Zhang, Z., Wang, D. (2018) "Measurement of 3D Ultrasonic Wavefield Using Pulsed Laser Holographic Microscopy for Ultrasonic Nondestructive Evaluation", *Sensors*, Vol.18, No.2, DOI. This is a major research output from collaborative research with Xi'an University of Science and Technology.

(MEMARC) **Messina, M.**, Njuguna, J., and **Palas, C.** (2018) "Mechanical Structural Design of a MEMS-Based Piezoresistive Accelerometer for Head Injuries Monitoring: A Computational Analysis by Increments of the Sensor Mass Moment of Inertia," *Sensors*, Vol. 18, No. 1, p. 289, DOI.

(PROTECT) Zheng, X., Zhang, C., Lv, F., **Zhao, F.,** Yuan, S., Yue, S., Wang, Z., Li, F., Jiang, H. & Wang, Z. (2017), "A 40-Gb/s quarter-rate SerDes transmitter and receiver chipset in 65-nm CMOS", *IEEE Journal of Solid-State Circuits*, Vol. 52, No. 11, pp. 2963-2978, DOI.

OTHER ITEMS

(ARI) ARI has been awarded "Practitioner" status by the Institute of Physics Juno Project, which aims to advance gender equality in physics higher education in the UK and Ireland, and improve working practices for all. The promotion from "Supporter" to "Practitioner" status is a major achievement and recognises that structures are in place to build a better environment for all staff, based on a detailed Juno Action Plan. ARI is now working towards the attainment of "Champion" status.

Dr. Claire Burke (ARI) has been selected to present her work to MPs in the House of Commons in March 2018, as part of the STEM for Britain Exhibition of Posters by early-career research scientists, engineers and mathematicians. She will also be presenting her work at Knowsley Safari Park in March 2018. Dr. Burke and **Dr. Helen Jermak** will both be presenting their work at the Bluedot Festival in July 2018. The festival takes place at Jodrell Bank and is 'an intergalactic festival of music, science, arts, culture and the exploration of space'.

(EEE) **Prof. Emil Levi** of the Electric Machines and Drives research group completed the work as the track "Electric Machines and Drives" Chair for the IEEE 19th Int. Conf. on Industrial Technology ICIT, Feb. 2018, Lyon, France.

(LOOM) **Dr. Trung Thanh Nguyen** has two papers indexed by Web of Science in the top 1% of the academic field of Engineering in terms of number of citations in 2017. They were ranked 57th out of 37,607 articles in "Automation Control Systems" and 379th out of 53,076 articles in "Computer Science Artificial Intelligence", respectively.

(PROTECT) **Prof. Abdennour El Rhalibi** has been appointed for a fourth year as Expert Advisor for the EU Education, Audiovisual and Culture Executive Media Agency, for their Creative Europe – MEDIA Programme. He will be advising in the framework of the Call for Proposals EACEA/24/2017 "Support for the Development of European Video Games". Prof. El Rhalibi was also appointed General Chair of the 12th International Conference Edutainement 2018, organised at Xian, PRC, in collaboration with X'ian University of Technology, Hangzhou Normal University and Huaiyin Institute of Technology. The conference will include several technical tracks and two international workshops including the workshop funded by the recent Newton Fund Researcher Links award.

Dr. Rubem Pereira has been appointed Workshop Co-Chair for the 20th IEEE International Conference on High Performance Computing and Communications (HPCC-2018), which will be held in Exeter, England, UK, 28-30 June 2018; and general chair of the 12th International Workshop on Telecommunication Networking, Applications and Systems – TeNAS 18 - in conjunction with AINA2018, Pedagogical University of Cracow, Poland, May 16-18, 2018.

Dr. Gyu Myoung Lee delivered a speech on ITU-T standardization activities, and future plans as Chair of the ITU-T Focus Group on Data Processing and Management for IoT and Smart Cities & Communities at the 1st ITU workshop on data processing and management, at DG-CONNECT, European Commission, Brussels, Belgium, 19 February 2018.

FET RESEARCH NEWSLETTER

EXTERNAL RESEARCH GRANTS SECURED (THRESHOLD: £10K)

ARI

£18k awarded to LJMU, visiting professorship grant for Prof. Johan Knapen and **Dr. Steve Longmore**. Leverhulme Trust Visiting Professorship Grant, Sep. 2018 – Sep. 2019.

£38k allocated to LJMU, The next generation of holistic galaxy formation simulations at Liverpool John Moores University, **Dr. Rob Crain**. Royal Society Research Fellow Enhancement Award, Dec. 2017-Nov. 2019.

£500k allocated to LJMU, Astro-ecology: the solution from the skies to save Earth's biodiversity, **Dr. Steve Longmore**. STFC Global Challenges Research Fund Foundation Award, 2018-2023.

£1.3m allocated to LJMU, Astrophysics Research, **Prof. Chris Collins**. STFC Consolidated Grant Renewal, 2018-2021.

£1.5m allocated to LJMU, A holistic approach to large-scale structure cosmology, **Dr. Ian McCarthy**. European Research Council Consolidator Grant, 2018-2023.

GERI

£75k allocated to LJMU, Green Electronics: Interfacial Reaction of Nano-geopolymer Ceramic Reinforced SnCu Solder and Failure Analysis, **Dr. Guangming Zhang** and **Prof. David Harvey**. LJMU as the lead partner for the grant of £150k funded by Newton Fund Institutional Links, 2018-2020.

LOOM/MEMARC

£50k allocated to LJMU, Prioritising Vehicle Cleanness for better air quality, **Dr. Zaili Yang**. EPSRC Catapult Researcher in Residency Programme, 2018-2019.

PROTECT/Computer Science

£100k allocated to LJMU, Data Analytics For Health-Care Profiling Using Smart Meters, **Dr. William Hurst**. EPSRC First Grant, Mar. 2018 – Mar. 2019.

£104k allocated to LJMU, ProAccel (Productivity Accelerator), **Dr. William Hurst, Dr. Nathan Shone, Dr. David Tully** and **Prof. Qi Shi**., Innovate UK SBRI funding competition: Business Productivity Portal, Nov. 2017-Mar. 2018.

AWARDS/PRIZES/KEYNOTE ADDRESSES (AT RECOGNISED INTERNATIONAL CONFERENCES)

(AMP) **Prof. Paulo Lisboa** delivered a funded keynote address "Computational Intelligence in Medicine and Biology", at the XIII IEEE Latin American Summer School on Computational Intelligence (EVIC), 13-15 December 2017, Valparaíso, Chile.

(EEE) Electric Machines and Drives academics received the Committee Prize Paper Award (Third Prize) of the Electric Machines Technical Committee of the IEEE Industrial Electronics Society for 2016 for the paper "An integrated on-board battery charger with a nine-phase PM machine", jointly authored with the academics from the University of Nottingham (author list: **N. Bodo, E. Levi, I. Subotic, M. Jones**, J. Espina, L. Empringham, M. Johnson). The paper was presented at the IEEE Ind. Elec. Soc. Annual Meeting IECON, Florence, Italy, 2016, pp. 1767-1772, while the award was announced at the IEEE Ind. Elec. Soc. Annual Meeting IECON, Beijing, China, Oct. 2017.

(LOOM) **Prof. Jin Wang** delivered a funded Plenary speech titled "Evidential reasoning rule and its application to safety and reliability assessment" at the 2017 2nd International Conference on System Reliability and Safety, 20-22 December 2017, Milan, Italy.

(LOOM) **Prof. Zaili Yang** presented "Development of risk studies in maritime supply chains – Towards resilient and sustainable transport", as a keynote opening address at the 1st International Conference on Integrated Container Supply Chain, 4-8 November, Ningbo, China. The conference was jointly organized by Ningbo University and Liverpool John Moores University and was funded by the Chinese government through the ENRICH2 project (£110k), which focuses on collaborative container supply chains, the second phase of the EU FP7 project ENRICH (2013-2017) coordinated by LOOM.

(LOOM) The project led by **Dr. T. T. Nguyen, Prof. Z. Yang, Prof. I. Jenkinson, Prof. J. Wang**, and **Prof. A. Al-Shamma'a** was one of three Highly Commended projects (out of 25 short-listed projects) in the Newton Prize awards 2017.

(PROTECT) **Prof. Abdennour El Rhalibi** delivered a keynote presentation on "Machine Learning and Visualisation in Games Research and Digital Healthcare" to the 28th international conference IEEE PRASA/ROBMech. 1 Dec. 2017, hosted at Central University of Technology, Free State(CUT), Bloemfontein, South Africa.

(PROTECT) **Prof. Dhiya Al-Jumeily** delivered a keynote address, "Applications of Artificial Intelligence in Healthcare and Medicine", at the XIII Brazilian Congress on Computational Intelligence, 30 October-2 November 2017, Institute of Computing of the Universidade Federal Fluminense in Niterói, Rio de Janeiro, Brazil.

RESEARCH IMPACT GENERATING ACTIVITIES

(LOOM): A research group led by **Dr. Trung Thanh Nguyen, Dr. Charly Lersteau** and **Ms. Ran Wang** has delivered a simulation model to improve logistics operations on the manufacturing floor of car manufacturer Vauxhall's Ellesmere Port plant.

(LOOM) <u>FET research in maritime logistics and port optimisation</u> led by **Dr. T.T. Nguyen, Prof. I. Jenkinson, Prof. Al-Shamma'a, Prof. Z. Yang, Prof. J. Wang, Dr. C. Lersteau** and **Dr. M. Garza-Fabre** has been included as an example of UK research on the theme "Sea and Trade routes" in as part of the German Ministry of Education and Research's Science Year: 2016-2017.

IMPORTANT ITEMS FOR POSTGRADUATE RESEARCHERS INCLUDING PHD COMPLETIONS AND RESEARCH INITIATIVES AT FET

(LOOM) A paper by **Mr. Danial Yazdani** (co-authored with **Dr. Trung Thanh Nguyen** and **Prof. Jin Wang**) has received the highest reviewing score in the conference track EvoSToc

in the 21st European Conference on the Applications of Evolutionary Computation, to take place in Parma, Italy, April 2018.

INTRODUCTION TO NEWLY APPOINTED RESEARCH ACTIVE MEMBERS

(PROTECT) **Dr. Carl Chalmers** has joined the Department of Computer Science as a Lecturer teaching degree apprenticeships. Before joining the department, he was a Systems Engineer at LJMU and was responsible for both the delivery and management of a wide variety of technologies and services. His research interests include smart technologies, ambient assistive living, machine learning, high performance computing, cloud computing and data visualisation. He is keen to collaborate with other members of staff in these fields although he is happy to get involved in other research areas.

(LOOM) **Dr. Milad Armin** has recently joined the Department of Maritime and Mechanical Engineering as a lecturer in Marine and Offshore Engineering. His research interest is the dynamics of floating and subsea structures, specifically fluid-structure interaction. Milad received his MSc and PhD at Strathclyde University. His PhD thesis title is Interaction of Two Tandem Cylinders Undergoing VIV: Mathematical Modelling and Experiments, an extension to his MSc studies in Offshore Floating Systems. He has also worked as a maintenance engineer. Milad is looking forward to using his expertise to help LOOM and FET expand its research portfolio in energy research.

REF UPDATE

FET researchers have been awarded **HEI Uplift Funds** to develop potential Impact Case Studies (ICS) for REF2021. Each award has a value of £3k, Jan. 2018 – Mar. 2018:

- **(ARI) Dr. Stacey Habergham-Mawson,** The National Schools' Observatory.
- **(GERI) Prof. Mike Morgan**, From Concept to Production: An Exemplar for Industry-Academic collaboration. Builds upon a REF2014 ICS.
- **(LOOM) Dr. Trung Thanh Nguyen**, Advanced port centric logistics operations.

Further decisions on REF2021

Part 2 of HEFCE's decisions on REF2021 was released on 21 November 2017. The decisions predominantly concerned staff eligibility, outputs and the number of impact case studies to be returned by Units of Assessment (UOA).

Criteria for **staff eligibility** to be returned to REF2021 start with contractual status i.e. Teaching & Research, or Research-

only staff working a minimum 0.2 FTE. Additionally, to be eligible, staff must be independent researchers (not working under the supervision of a more senior member of staff), and have a substantive connection to the University. Research Assistants are not eligible to be returned, unless (exceptionally), they are named PI on a research grant for example. From this pool of eligible staff, LJMU is expected to submit all LJMU staff with *significant responsibility to undertake research. *These staff are those for whom explicit time and resources are made available to engage actively in research, and it is expected as part of their job role (staff engaged exclusively in scholarship would not be considered submittable). The process to define the submittable pool of staff will be managed in conjunction with the roll-out of the University-wide workload allocation model during 2018, through a sub-group of Faculty Research, Scholarship and Knowledge Transfer Committee.

A minimum of one **output** will be required for each member of staff with significant responsibility to undertake research. A

maximum of five outputs may be attributed to an individual (including staff who have left LJMU), but this does not preclude the submission of further outputs that the member of staff has co-authored with LJMU colleagues and where such outputs are assigned to them. For staff* who join LJMU during the current REF-cycle and are employed by the University on the census date of 31 July 2020, outputs can be returned by LJMU as well as by the institution where the member of staff previously worked and generated the output.

UOA submissions are required to return a minimum of two **impact case studies** (up to 14.99 FTE staff), and an additional case study for every 14.99 FTE thereon.

Watch-out for University REF briefings in the Spring, but don't hesitate to contact me if you have any immediate queries or concerns. See also the REF2021 website and FAQs.

Dr. Diana Leighton, D.J.Leighton@ljmu.ac.uk

EXTERNAL COLLABORATION

(EEE) **Dr. Obrad Dordevic** visited Southeast University in Nanjing, PR China, where he delivered a talk on recent research in the Electric Machines and Drives research group at LJMU and discussed possibilities for research collaboration with the host, Prof. Zheng Wang. EEE also welcomed Dr. Shoutao Li from Jilin University, China, for a 12-month visit.

(GERI) Dr. Jiang Chen of the University of Shanghai for Science and Technology, China, joined GERI for a 2 week visit in December 2017, as part of an ongoing collaboration between LJMU and his institution.

(LOOM) welcomed a number of research visitors in December 2017: Prof. Hongxia Ge from Ningbo University, China, (3 month visit); Dr. Bin Ramli Rizauddin from Universiti Kebangsaan Malaysia (UKM), for a 2 month visit; PhD researcher Ning Lin visited for 1 month from Molde University College, Norway.

(MEMARC) Dr. Jun Liu from Hebei University of Environmental Engineering, China, started her 24-month research visit as a sponsored PostDoc with MEMARC in December 2017.

(PROTECT) During **Prof. Abdennour El Rhalibi's** visit to Central University of Technology Free State (CUT) at Bloemfontein in South Africa, he attended research seminars and technical demonstrations, and discussed opportunities for collaboration with CUT researchers. The researchers are involved in number of innovative projects on sensors, big data, Internet of Things, Applied Machine Learning, robotics, mechanical engineering, power generation and storage, and 3D printing; involving collaboration with SMEs, government bodies and hospitals.

NOTABLE PUBLICATIONS

(ARI), Raiteri, C.M., **Steele, I. A., Jermak, H.,** et al. (2017) "Blazar spectral variability as explained by a twisted inhomogeneous jet", *Nature,* Vol. 552, pp. 374–377, DOI. This paper used Liverpool Telescope data.

(EEE) Ahmeda, K., Ubochi, B., **Benbakhti, B., Duffy, S. J.,** Soltani, A., **Zhang, W.** & Kalna, K. (2017) "Role of Self-Heating and Polarization in AlGaN/GaN Based Heterostructures", *IEEE Access,* Vol.5, pp. 20946-20952, DOI.

(GERI) **Chen, X., Opoz, T**. & Oluwajobi, A.O. (2017) "Analysis of grinding surface creation by single grit approach", *Journal of Manufacturing Science and Engineering, Transaction of the ASME,* Vol.139 (12), DOI.

(LOOM) – **Lu, L**., Jump, M., and Padfield, G.D. (2017), "Development of a Generic Time-to-Contact Pilot Guidance Model", *Journal of Guidance, Control, and Dynamics*, DOI This is a major research output from a €5.2m FP7 EU-funded project of (ARISTOTEL).

(PROTECT) **Baker, T.,** Ugljanin, E., Faci, N., Sellami, M., Maamar, Z., & Kajan, E. (2018) "Everything as a Resource: Foundations and Illustration through Internet-of-Things" *Computers in Industry,* Vol.94, Jan.2018, pp.62-74, DOI. This is an output from a collaborative EU project entitled "Everything-as-a-Resource for IoT" with Lyon 1 University (France), LISITE Laboratory (France), and State University of Navi Pazar (Serbia).

OTHER ITEMS

(ARI) **Dr. Claire Burke** took first place at the Merseyside heat of the Institute of Physics' "3-Minute Wonder" competition, with PhD student **Kirsty Taggart** one point behind as runner-up. They will both go forward to the national final at the Royal Institution in London in May 2018.

(EEE) An invited book chapter in the prestigious *Wiley Encyclopedia of Electrical and Electronics Engineering* has been posted online in November in the Wiley Online Library. M.J. Duran,

E. Levi, F. Barrero; "Multiphase electric drives: Introduction", Editor: J. Webster, 2017, pp. 1-26, DOI.

(PROTECT) The Faculty International Conference Development in eSystem Engineering has successfully ranked within the CORE Ranking. The ranking process takes place every 4 years, and out of 43 new conferences submitted in this round, only 8 were ranked, including DeSE. The full list is available here.

(PROTECT) **Prof. Dhiya Al-Jumeily** and **Dr. Abir Hussain** have negotiated a Special Session at the IEEE World Congress on Computational Intelligence in Data Engineering and its Applications to Real-World Problems. It is planned to take place in Rio de Janeiro, Brazil, on 8th - 13th of July 2018. The bi-annual Congress is the largest technical event in the field of computational intelligence.

FET researchers have been awarded **Knowledge Exchange and Innovation Vouchers**. Each award has a value of £10k, Jan. 2018 – Mar. 2018:

- (ARI) **Prof. Iain Steele**, Asteroid Mining - Feasibility and business case development.
- (BEST) **Dr. Badr Abdullah**, Wellbeing monitor of Elders with Dementia in Normal Living Environment; **Dr. Ana Bras**, BIOCRETE - Self healing concrete, protection against corrosion; **Dr. Patryk Kot**, Water as a military tool - hand held detection unit; **Dr. Stephen Wylie**, Combining microwave and ultrasonic flow.
- (EEE) **Dr. Zhigang Ji**, True Random Number Generator, Design and Validate, smart device to tackle password dilemma.

- (GERI) **Dr. Frederic Bezombes**, Autonomous detection of storage tank defects; **Prof. Mike Morgan**, Glass Grinding Wheel development.
- (LOOM) **Dr. Trung Thanh Nguyen**, IoT- based pickup/delivery scheduling/routing for food redistribution using bicycles; **Dr. Linghai Lu**, VR Simulation platform with motion system.
- (PROTECT) **Dr. Bo Zhou**, CyberD3sign; **Dr. Carl Chalmers**, High Performance Computing using Dynamic Pipelines and Resource allocation; **Dr. Abir Hussain**, Investigation and understanding constraints of data mining; **Dr. Hoshang Kolivang**, Cultural Heritage in Augmented Reality; **Dr. Thar Shamsa**, Platform to access spare capacity - testbed facility.