In August 2018, Dr. Charan Litchfield joined the School of Engineering and Sciences, WVU Tech, as an Assistant Professor. Prior to joining WVU Tech, Dr. Litchfield had over 10 years of academic and industrial experience. His prior academic appointment at University of Greenwich, he instigated, developed and taught M.Sc. wireless communication engineering courses for a new postgraduate communications program. Activities included being a lead supervisor for fifty-one M.Sc. projects and co-supervisor for two Ph.D. students. Outcomes of academic appointment include IET accreditation for the courses "Advanced Communication Systems" and "Wireless Communication Systems". Dr. Litchfield actively contributed to an increase in student numbers from 23 in 2007 to 128 in 2010, generating over £1.4 million ($2.25million) for the department. During his time at WVU Tech, Dr. Litchfield has taught several classes including Introduction to Communication Systems and Signals and Systems I and II. Dr. Litchfield received his Ph.D. in Electrical Engineering at the University of Kent at Canterbury in 2006.

Career highlights are given herewith:
- **Academic experience: > 10 years, PhD 2006, MSc 2002, BEng 2000.**
- **Research Contributions: > 10 refereed research papers, >20 Industrial reports.**
- **Research Proposals: >3**
- **Postgraduate Research Supervision: > 50 MSc students graduated, > 2 PhD students graduated.**
- **> 10 years Industrial experience.**
- **Professional Membership: IEEE member (since 2006).**

Academic Qualifications
2006: PhD Department of Electronics, University of Kent at Canterbury - Canterbury, Kent, United Kingdom
Thesis: Single-User Receivers for Frequency Selective WCDMA Channels.

2002: MSc with Distinction, Broadband and Mobile Communications, Department of Electronics, University of Kent at Canterbury - Canterbury, Kent, United Kingdom
Thesis Title: Multichannel Power Amplifier Design for Multicarrier CDMA
2000: B.Eng, Electronics Engineering 1st Class Honour's, Department of Electronics, University of Kent at Canterbury - Canterbury, Kent, United Kingdom

Academic Appointments
Aug 2018 - current; Assistant Professor, Department of Electrical and Computer Engineering, WVU Tech, Beckley, WV
Sept 2009 – July 2011, Senior Lecturer Electronics Technology Icon College of Technology and Management, London, UK
Sept 2007 – July 2010, Senior Lecturer Communications Systems School of Engineering, The University Greenwich, UK
Jan 2002 – Nov 2006: Teaching Associate, University of Kent at Canterbury.

Industrial, Research and Development Appointments
Mar 2014 – May 2018: Supervisor System Engineer, Ontrac, Petaluma, CA
Aug 2012 – Nov 2013: Consultant, Alantro Communications, Santa Clara, CA
Jan 2007 – Aug 2007: Research Associate, University of Kent in Canterbury, PITO Grant No.ch,23037947
Jan 2002 – Nov 2006: Consultant, Harada Industries (Japan), Sittingbourne, UK.
Jan 2004 – Sept 2004: System Designer, RFIP Solutions, Oxford.
Sept 2000 – Nov 2001: System Development Engineer, IIT Telecom, Canterbury, UK.
Sept 1999 – July 2000: Project Developer, Puma Electronics, Sandwich, UK.

Main Research Interests
Mobile Wireless Communication Systems; Information Theory and Channel Coding; Estimation and Detection Theory; Spread Spectrum CDMA Systems; Adaptive Multi-user Receivers; Adaptive Antenna Arrays; MIMO; mm-Wave MIMO Communication; Random Access Communication Networks; Random Sequences in Communications and Radar Systems; Radar Signal Processing; Adaptive Filtering and Signal Processing in Communications; Adaptive Equalization and Modem Design; Blind Algorithms in Multi-user Communications; Mobile Communications Fading Channel Modeling; Multi Carrier Techniques; 4G LTE, 5G Cellular Networks.

Student Supervision Track Record
Research, PhD Student Supervision: 2 PhD students graduated,
Masters Student Supervision: 52 graduated

Lecture Notes, Postgraduate and Undergraduate Teaching:
2019-Present. C. Litchfield, "Electric Circuits", Undergraduate, WVU Tech. (~ 10 Students)
2019-Present. C. Litchfield, "Digital Signal Processing", Undergraduate, WVU Tech. (~ 5 Students)
2018-Present. C. Litchfield, "Signals and Systems I,II", Undergraduate, WVU Tech. (~ 10 Students)
2018-Present. C. Litchfield, "Introduction to Communication Systems", Undergraduate, WVU Tech. (~ 10 Students)

2010. C. Litchfield, "Engineering Science", Undergraduate, Icon College of London. ('10~ 50 Students)
2010. C. Litchfield, "Telecommunication Principles", Undergraduate, Icon College of London. ('10~ 25 Students)
2009-10. C. Litchfield, "Mobile Communications", Undergraduate, Icon College of London. ('09~ 50 Students) ('10~ 50 Students)
2009-10. C. Litchfield, "Radio Communications", Undergraduate, Icon College of London. ('09~ 40 Students) ('10~ 50 Students)
2008-10 C. Litchfield, "Wireless Communications", Postgraduate, University of Greenwich ('08~80 students) ('09 ~60 students)
2007-08. C. Litchfield, "Advanced Communications", Postgraduate, University of Greenwich ('07 ~ 50 students)('08 ~ 60 students).
2006. C. Litchfield and F. Deravi, "Digital Signal Processing", Undergraduate, University of Kent. (~ 30 Students).
2005. C. Litchfield and Y. Yan, "Electric Circuits", Undergraduate, University of Kent. (~ 50 Students).
2004. C. Litchfield and L. Walczowski, "VLSI", Undergraduate, University of Kent. (~ 50 Students).

Presentations
1. MIMO Wireless Communication Networks: Future Perspectives, Sonoma State University, 03/2013.
2. Adaptive Filtering for Millimetre Wave Wireless Communication Channels, Newfield, 02/2013.
3. Cooperative CDMA for Next Generation Wireless Communication Networks, UTC, 05/2011.
4. Equalization for Time Variant Fading Channels, University of Missouri, 05/2011.
5. Algorithm for MC-CDMA Employing OFDM, University of Kent Colloquium, 05/2004.
6. Adaptive Receivers for Multicarrier CDMA Networks, University of Kent Colloquium, 01/ 2001.

Peer Reviewed Technical Publications
1. **C. Litchfield**; "*Interference Reduction in Multicarrier CDMA Via Blind Minimum Variance Multiuser Detector*", IEEE Southeast Con 2019
2. **C. Litchfield**; "*Information Capacity of Implicit Receiver Training in Unknown MIMO Channels*", IEEE Southeast Con 2019
3. A. Queshi, T. Kanakis, **C. Litchfield**, P. Rapajic; "*Adaptive MMSE Multiuser Detection (A-MMSE-MUD) in Asynchronous Cooperative CDMA Networks*", The 18th International Conference on Software, Telecommunications and Computer Networks, pp. 260 – 264, 2010.
4. Y. Nijsure, Y. Chen, **C. Litchfield**, P. Rapajic, P. Yuen, C. Chew, Y.H. Qin; "*Information-Theoretic Algorithm for Waveform Optimization within Ultra Wideband Cognitive Radar Network*", IEEE International Conference on Ultra-Wideband, Vol. 2, pp. 1 – 4, 2010.
5. T. Kanakis, **C. Litchfield**, P. Rapajic; "*Adaptive Virtual Relaying MIMO: Decode and Forward*", IEEE International Conference on Wireless Communications and Signal Processing (WCSP), pp. 1 – 5, 2009.
6. Y. Nijsure, Y. Chen, **C. Litchfield**; "*Hidden Markov Model For Target Tracking in UWB Radar Systems*", IEEE Personal and Indoor Mobile Radio Communications Conference (PIMRC), pp. 2065 – 2069, Sept 2009.
7. Y. Nijsure, **C. Litchfield**, Y. Chen, P. Rapajic; "*Vector Precoding Scheme for Multi-user MIMO Systems*", IEEE Vehicular Communications Conference (VTC), pp. 1 – 5, 2009.
8. M. Hossain, **C. Litchfield**, R. Wu, P. Rapajic; "*Linearization of High Frequency Amplifier Using the Signal injection Method*", Analog Signal Processing Conference, 2008.
9. **C. Litchfield**, R.J. Langley, P. Lee, J.C. Batchelor; "*Logarithmic Codecs for Adaptive Beamforming in WCDMA Downlink Channels*", Proceedings of the IEEE International Conference on Circuits and Systems (ISCAS), pp. 3526 – 3529, 2007.
10. **C. Litchfield**, R.J. Langley, P. Lee, J.C. Batchelor; "*Least Squares Adaptive Algorithms Suitable for Multiplierless LMMSE Detection in 3rd Generation Mobile Systems*", Proceedings of the 16th IEEE Annual International Conference on Personal, Indoor, and Mobile Radio Communications (PIMRC), Vol. 2, pp. 1039 – 1044, 2005.
11. **C. Litchfield**, R.J. Langley, P. Lee, J.C. Batchelor; "*The Use of Hybrid Logarithmic Arithmetic for Root Raised Cosine Matched Filters for WCDMA Downlink Receivers*", Proceedings of the IEEE International Conference on Wireless Communications and Networks (WCNC), Vol. 1, pp. 596 – 600, 2005.
12. **C. Litchfield**; "*Performance of Massive Multiuser MIMO Communications with Quantization Constraint*", IEEE Transactions in Wireless Communications, [to appear]