UTS:GBDTC
Global Big Data Technologies Centre

Full PhD Scholarships emphasising Antennas for Satellite and UAV Communications at the University of Technology Sydney (UTS)

The Global Big Data Technologies Centre (GBDTC)'s Electromagnetic Informatics Lab (EIL) at the School of Electrical and Data Engineering (SEDE), Faculty of Engineering and IT (FEIT), University of Technology Sydney (UTS) in Sydney, Australia is at the forefront of cutting-edge research on antennas and antenna systems. We are seeking two PhD students with strong academic backgrounds in Applied Electromagnetics and Antennas.

Research Topic:

- Antennas for 6G Satellite Communications
- Antennas for UAV Communications

Scholarship Value:

- **$28,854 (AUD)** per annual for 3 years
- *Tuition fee waived*
- Possible scholarship top-ups with $5,000 per year for students with excellent performance

Research and Responsibilities:

As technologies and society's demands for AWE (anytime wireless everywhere)-inspired devices and applications, realistic approaches include communications via LEO (low Earth orbit) satellites (cubesats and larger versions) to mobile terminals, as well as UAV swarms for more localized IoT ecosystems. Robust communications and applications in remote environments are a particular need to enable, for example, telemedicine. We are looking for exceptional candidates with analytical, numerical simulation and measurement experiences. Our PhDs are expected to contribute to top-tier refereed journal and conference papers. They are also expected to present their research at Flagship national and international conferences and workshops.

Lab Introduction:

UTS is the top-ranked young university in Australia, with high international ranking and standing in telecommunications and applied electromagnetics. The Global Big Data Technologies Centre (GBDTC) at UTS is an internationally leading multi-disciplinary research centre. It excels in antennas; millimetre-wave (mm-wave) and terahertz (THz) devices and circuits; wireless communications and sensing systems; 6G and IoT networks; and machine learning.

The GBDTC's Electromagnetic Informatics Lab (EIL) is among the strongest antenna research laboratories in the world. EIL hosts a number of prominent professors including three IEEE Fellows and one former CTO of a major international antenna company, two of whom are also Fellows of the Australian Academy of Engineering and Technology (ATSE). EIL researchers have proven track records and their scientific and engineering breakthroughs have led to numerous prestigious national and international awards. It is receiving strong support from the Australian Government and international industry. The EIL has established well-equipped measurement laboratories that provide cutting-edge RF, mm-wave and THz testing facilities including a mini compact range

anechoic chamber that is certified up to 90 GHz (the only chamber its kind in Australia and New Zealand) and the largest near-field antenna anechoic chamber in the Australian research community, operating from 700MHz to 50GHz.

Supervising Team:

The successful candidates will be supervised by a team consisting of three talented and internationally leading researchers.

- Principle supervisor: Dr. Can Ding
- Co-supervisor: Distinguished Prof. Y. Jay Guo
- Co-supervisor: Distinguished Prof. Richard W. Ziolkowski

Supervisor Information:

Dr. Can Ding is currently a Senior Lecturer in the GBDTC at UTS. He has been internationally recognised as a leading early career researcher in electromagnetics and 5G base station antennas. He has pioneered cutting-edge technologies to deploy 5G networks cost-efficiently with collocated 3G/4G/5G base station antennas and to eliminate self-interference among their different antenna elements. His research efforts led to a successful ARC DECRA grant (the most prestigious research grant in Australia for early career researchers) as the sole Chief Investigator (CI) in 2020. He has also been working closely with industry on state-of-the-art base station antenna designs with his research outcomes translated into solutions for cellular network operators such as Telstra & Vodafone.

Prof. Yingjie Jay Guo is the Director of GBDTC and Distinguished Professor at UTS. Jay is an internationally established scientist with 600+ publications including six books, 600+ research papers including 300+ IEEE journal papers and 26 granted international patents. He is regarded as a world-leading researcher in communications antenna systems including reconfigurable antennas, reflectarrays/transmitarrays, hybrid arrays and leaky wave antennas. He is an innovator with strong and sustained global industrial impact. His most recent research interest includes 6G antennas, in-band full duplex wireless communications systems, and joint communications and sensing.

Jay is a Fellow of the Australian Academy of Engineering (ATSE) and a Fellow of IEEE. He is the recipient of Australia Government Engineering Innovation Award (2012), Australia Engineering Excellence Award (2007) and CSIRO Chairman Medal (2007 and 2012). He was named one of the most influential engineers in Australia in 2014 and 2015, respectively. He was named one of the top researchers across all fields in Australia in 2020 and 2021. In Oct 2021, Jay led a successful bid to establish the New South Wales Connectivity Innovation Network (CIN) as the Founding Technical Director, bringing industry and universities to work with NSW government agencies to develop innovative connectivity solutions for the people of NSW.

Professor Richard W. Ziolkowski is a world leading expert in metamaterials and antennas who has made seminal contributions to these fields, and whose research papers are highly cited and influential. He is currently a Distinguished Professor in the GBDTC at UTS.

Professor Ziolkowski's academic and research achievements are reflected in his membership in the world's oldest engineering honor society, Tau Beta Pi; his membership in the honor society of

research scientists and engineers Sigma Xi; and of the multidisciplinary academic honor society, Phi Kappa Phi.

He was a 2014 Thomson Reuters Highly Cited Researcher, and citations rates for some of his peer-reviewed articles have surpassed 1000. His book, *Metamaterials: Physics and Engineering Explorations*, has been cited more than 3121 times.

He became a Professor Emeritus at the University of Arizona in 2018, where he was a Litton Industries John M. Leonis Distinguished Professor in the Department of Electrical and Computer Engineering in the College of Engineering, and a Professor in the College of Optical Sciences.

He was the recipient of the 2019 IEEE (Institute of Electrical and Electronics Engineers) Electromagnetics Award, which recognised his outstanding contributions to electromagnetic metamaterial-inspired physics and engineering, and localized wave phenomena.

He is a Life Fellow of the IEEE, and a Fellow of OPTICA (formally the Optical Society of America, OSA) and the American Physical Society (APS).

He served as the President of the IEEE Antennas and Propagation Society (IEEE AP-S) in 2005. He is also actively involved in other professional societies, such as the Union Radio-Scientifique Internationale (URSI), the Optical Society of America (OSA) and the International Society for Optics and Photonics, SPIE.

He was the 2014-2015 Australian Defence Science and Technology Organisation Fulbright Distinguished Chair in Advanced Science and Technology.

Contact:

If you are interested, please provide your academic transcript and CV to us.

For more information, please contact Dr. Can Ding

Email: can.ding@uts.edu.au