Darryn Anton Jordan

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Ph.D. candidate at the University of Cape Town (UCT), South Africa. Specialised in frequency-modulated continuous-wave (FMCW) synthetic aperture radar (SAR). Passionate about digital signal processing and system design, with strong technical and interpersonal skills.

Formal Education

- **University of Cape Town** — **Cape Town, South Africa**
  Ph.D. in Electrical Engineering in Radar, Submitted for examination. — *2016–2020*
- **University of Cape Town** — **Cape Town, South Africa**
  B.Sc. in Electrical Engineering in Mechatronics, Graduated with honours. — *2012–2015*
- **Hudson Park High School** — **East London, South Africa**
  National Senior Certificate, Graduated with honours. — *2007–2011*

Relevant Experience

- **Development of the miloSAR** — **Cape Town, South Africa**
  University of Cape Town — *2016–Present*
  Design and implementation of a low-cost FMCW SAR, known as the *miloSAR*. This project provided experience in radar signal processing, which included the FPGA-based implementation of DSP algorithms such as digital down-conversion, FIR filtering and coherent integration. Furthermore, a novel spur suppression algorithm was developed as part of the project. This algorithm was validated with simulated and measured data. Well-developed planning and organisational skills were required for a project of this scope in addition to high technical ability in terms of software, gateware and hardware.
- **Development of the NeXtRAD Quick-Look Processor** — **Cape Town, South Africa**
  University of Cape Town — *2015–2017*
  Development of *NeXtLook*: A multi-threaded quick-look processor for the UCT NeXtRAD radar. NeXtLook implements pulse compression and Doppler processing algorithms to produce range-time-intensity and range-Doppler plots for real-time data validation. This work resulted in exposure to the FFTW, OpenCV and Boost libraries. While its final C++ implementation leverages CPU multi-threading, a GPU-based implementation in CUDA was also investigated.

Technical Skills

- **Software:** Python, C/C++, Matlab, CUDA.
- **Gateware:** Verilog (Vivado & Quartus).
- **Hardware:** Xilinx Zynq 7010 (Red Pitaya), LMX2492EVM, Emlid Reach M+ RTK GNSS, Jetson TK1, STM32F0, Altera MAX 10 (DE10-Lite), Arduino, Raspberry Pi.
- **Equipment:** Spectrum Analysers, Network Analysers, Oscilloscopes, Multi-meters.
- **Operating Systems:** Linux, Windows.
- **Other:** Git, LaTeX.

Positions of Responsibility

2020: Undergraduate Project Supervisor.

2020: IET Radar, Sonar & Navigation Journal Peer Reviewer.

2020: Space Studies Masters Programme Remote Exam Administrator.

2019–2020: Radar Masters Programme Teacher's Assistant.

2017–2018: Signals & Systems II Tutored Reassessment Programme (TRP) Assistant Lecturer.

2017: Embedded Systems I Tutor.

2016: Signals & Systems II Teacher's Assistant.

Recent Journal Publications

- **IEEE Transactions on Microwave Theory and Techniques**
  "Suppression of Spur Chirps for Fractional-N PLL-Based Heterodyne FMCW SAR"
  D. A. Jordan, M. R. Inggs, M. Y. Abdul Gaffar, 2020, DOI: 10.1109/TMTT.2020.3030273
- **IET Electronics Letters**
  "Integer Boundary Spur Considerations for Fractional-N PLL Based FMCW Radar"
  D. A. Jordan, M. R. Inggs, M. Y. Abdul Gaffar, 2020, DOI: 10.1049/EL.2020.0764

References

Dr. Michael Inggs: Emeritus Professor, University of Cape Town (mikings@gmail.com)

Dr. Yunus Gaffar: Senior Lecturer, University of Cape Town (yunus.abdulgaffar@uct.ac.za)

Dr. Stephen Paine: Lecturer, University of Cape Town (stephen.paine@uct.ac.za)