

# Chance Tarver, Ph.D.

Wireless Communications Systems Engineer

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## Summary

Wireless communications systems engineer and technical leader with 10+ years of experience bridging system-level design and hands-on hardware implementation. Proven track record leading cross-functional, global teams to deliver proof-of-concept platforms from initial algorithm development through real-time lab validation on FPGA, SDR, and GPU-based systems. Deep expertise in physical layer modem design, massive MIMO, 5G NR, and satellite communications, with a focus on translating complex simulations into field-ready prototypes. Proficient in MATLAB, C/C++, Python, and CUDA.

## Skills

### 📶 System Design & Signal Processing

Physical Layer Modem Design, Massive MIMO, LDPC, Digital Predistortion, Link Budget Analysis, Channel Estimation, Satellite Communications

### 🔗 Prototyping & Implementation

MATLAB, Linux, LabVIEW, GNURadio, Simulink, FPGA, SDR (USRP), RF Test & Measurement, Python, PyTorch, C/C++, CUDA

### 📶 Standards & Protocols

3GPP NR, LTE, OFDM, FDD/TDD, RACH/HARQ, Carrier Aggregation, ORAN

## Experience

### Samsung Research America

Staff Research Engineer

Plano, TX  
Mar 2023 – Present

- Led precommercial development of an upper mid-band FR3 massive MIMO platform (256 TRX), coordinating a global cross-functional effort across multiple teams to deliver a state-of-the-art PoC from architecture through lab validation, and presenting progress and results to senior leadership.
- Drove GPU-based AI-RAN testbed development on a cuBB-based DU, integrating a proprietary MIMO RU and verifying OTA performance to enable novel AI features for next-generation base stations.
- Spearheaded development of an AI-based digital predistortion solution for a challenging high-efficiency PA architecture, improving energy efficiency of commercial radio units.

### Samsung Research America

Senior Systems Design/Architecture Engineer

Plano, TX  
Jan 2020 – Mar 2023

- Designed and implemented a digital self-interference suppression algorithm and massive MIMO DPD system for sub-band full duplex, transitioning from simulation through FPGA/RF integration to field evaluation, meeting 5G emission requirements.
- Designed and implemented physical layer modem modifications to RACH/HARQ procedures in srsLTE C++ to support long-latency satellite links, conducting end-to-end lab validation using SDR (USRP) platforms and a satellite channel emulator under realistic propagation conditions.
- Developed custom FPGA SDR platform software and led field testing campaigns for distributed MIMO, characterizing channel reciprocity and calibration to inform system design decisions.

### Samsung Research America

RF and PoC Intern

Plano, TX  
May 2017 – Dec 2017, May 2019 – Aug 2019

- Developed GPU-accelerated LDPC decoder, enabling real-time operation in a virtualized RAN (vRAN) system.
- Built real-time spectrum-sharing tools for LTE in the CBRS band using LabVIEW Communications and USRP, demonstrating dynamic spectrum access capabilities.

### Lockheed Martin

College Student Tech SR. Specialist, Intern

Hanover, MD  
May 2016 – Aug 2016

- Designed and implemented a real-time wireless sensing application using GNURadio and SDR for the Cyber Solutions IRAD group, delivering a working prototype within a single internship term.

## Education

### Rice University

Electrical and Computer Engineering

Ph.D.  
Houston, Texas, USA • May 2016 – Aug 2022

Dissertation: Nonlinearity Correction in Massive MIMO Systems via Virtual DPD | Advisor: Prof. Joseph R. Cavallaro

- Developed a novel neural network-based predistortion architecture that operates before precoding in massive MIMO, reducing computational complexity while maintaining linearity – validated through simulation and GPU-based prototyping.
- Published 15+ peer-reviewed papers in IEEE conferences and journals on digital predistortion, massive MIMO, and machine learning for wireless systems.

### Rice University

Electrical and Computer Engineering

M.S.  
Houston, Texas, USA • Aug 2014 – May 2016

Thesis: Sub-Band Digital Predistortion for Noncontiguous Carriers: Implementation and Testing

### Louisiana Tech University

College of Engineering and Science

B.S. Electrical Engineering & B.S. Mathematics  
Ruston, Louisiana, USA • Aug 2010 – May 2014

## Selected Publications

<b>Sim2Field: End-to-End Development of AI RANs for 6G</b> Proceedings of the 2nd ACM Workshop on Open and AI RAN, 22-28	2025
<b>5G-Advanced Duplex Evolution for Massive MIMO and Multi-Beam Operations</b> IEEE Wireless Communications and Networking Conference (WCNC), 1-6	2023
<b>Reducing FDD MMU Form Factor With Active Cancellation</b> IEEE/MTT-S International Microwave Symposium (IMS 2022), 771-774	2022
<b>5G New Radio and Non-Terrestrial Networks: Reaching New Heights</b> IEEE International Conference on Communications Workshops (ICC Workshops)	2022
<b>Nonlinearity Correction in Massive MIMO Systems via Virtual DPD</b> Rice University (Ph.D. Dissertation)	2022
<b>Virtual DPD Neural Network Predistortion for OFDM-Based MU-Massive MIMO</b> 55th Asilomar Conference on Signals, Systems, and Computers	2021
<b>Enabling Advanced Duplex in 6G</b> IEEE International Conference on Communications Workshops	2021
<b>XDD: Cross Division Duplex in 5G-Advanced</b> IEEE 94th Vehicular Technology Conference (VTC2021-Fall), 1-5	2021
<b>OFDM-Based Beam-Oriented Digital Predistortion for Massive MIMO</b> IEEE International Symposium on Circuits and Systems (ISCAS), 1-5	2021
<b>GPU-Based, LDPC Decoding for 5G and Beyond</b> IEEE Open Journal of Circuits and Systems, vol. 2, pp. 278-290	2021
<b>Extending 5G TDD Coverage with XDD: Cross Division Duplex</b> IEEE Access 9, 51380-51392	2021
<b>GPU-Based LDPC Decoding for vRAN Systems in 5G and Beyond</b> IEEE International Symposium on Circuits and Systems (ISCAS), 1-5	2020
<b>Predistortion of OFDM Waveforms Using Guard-Band Subcarriers</b> 54th Asilomar Conference on Signals, Systems, and Computers	2020
<b>Neural Network DPD via Backpropagation Through a Neural Network Model of the PA</b> 53rd Asilomar Conference on Signals, Systems, and Computers, 358-362	2019
<b>Machine Learning Enhanced Channel Selection for Unlicensed LTE</b> IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)	2019
<b>Design Trade-Offs for Decentralized Baseband Processing in Massive MU-MIMO Systems</b> 53rd Asilomar Conference on Signals, Systems, and Computers, 906-912	2019
<b>Design and Implementation of a Neural Network Based Predistorter for Enhanced Mobile Broadband</b> IEEE International Workshop on Signal Processing Systems (SiPS), 296-301	2019
<b>Enabling a "Use-or-Share" Framework for PAL-GAA Sharing in CBRS Networks via Reinforcement Learning</b> IEEE Transactions on Cognitive Communications and Networking 5 (3), 716-729	2019
<b>Opportunistic Channel Access Using Reinforcement Learning in Tiered CBRS Networks</b> IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)	2018
<b>Multi Component Carrier, Sub-Band DPD and GNURadio Implementation</b> IEEE International Symposium on Circuits and Systems (ISCAS), 1-4	2017
<b>Parallel Digital Predistortion Design on Mobile GPU and Embedded Multicore CPU for Mobile Transmitters</b> Journal of Signal Processing Systems 89 (3), 417-430	2017
<b>Application-Specific Accelerators for Communications</b> Handbook of Signal Processing Systems, 503-541	2018
<b>Low-Complexity, Multi Sub-Band Digital Predistortion</b> Journal of Signal Processing Systems 90 (10), 1495-1505	2017
<b>Low-Complexity Subband Digital Predistortion for Spurious Emission Suppression in Noncontiguous Spectrum Access</b> IEEE Transactions on Microwave Theory and Techniques, vol. 64, no. 11, pp. 3501-3517	2016
<b>Low-Complexity, Sub-Band DPD with Sequential Learning: Novel Algorithms and WARPLab Implementation</b> IEEE International Workshop on Signal Processing Systems (SiPS), 303-308	2016
<b>Sub-Band Digital Predistortion for Noncontiguous Transmissions: Algorithm Development and Real-Time Prototype Implementation</b> 49th Asilomar Conference on Signals, Systems and Computers, 1180-1186	2015

## Languages

English  
Native

French  
A2