

# Jacob Holtom

ELECTRICAL ENGINEER

Tempe, AZ 85282

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## Work Experience

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### WISCA @ ASU

GRADUATE RESEARCH ASSISTANT

Tempe, Arizona

Oct 2019 - PRESENT

- Develop WISCANet Software Defined Radio Network with advanced MIMO and phase coherent capabilities
- Develop novel distributed beamforming algorithms, and demonstrate over-the-air using WISCANet
- Develop DSP Algorithm Corpus for DASH-SoC

### Artemis Inc

RADAR ENGINEERING INTERN

Spanish Fork, Utah

Apr 2019 - Aug 2019

- Evaluate and develop autofocus algorithms for Stripmap SAR using Time-Domain Backprojection
- Explore and develop combined radar and communications waveforms
- Develop machine learning models for SIGINT
- Develop direction finding algorithms for co-operate use on Software Defined Radar

### BYU Spacecraft Group

LEAD COMMUNICATIONS ENGINEER

Provo, Utah

Apr 2016 - Apr 2019

- Oversee twin satellites will fly in Sept 2019
- Design an end-to-end satellite communications system within technical constraints
- Lead RF engineering work including the design of dish and on-board antennas and amplifier systems
- Develop custom ground station system that utilizes an Ettus USRP and GNURadio

### L-3 Communication Systems West

RF ENGINEER

Salt Lake City, Utah

Jan 2018 - Sep 2018

- Design RF hardware for mission critical systems
- Test and debug RF hardware
- Work in team and follow standard engineering process

### BYU Computer Aided Engineering Design and Manufacturing

ASSISTANT SYSTEMS ADMINISTRATOR

Provo, Utah

Nov 2015 - Jan 2018

- Developed Linux infrastructure to maintain storage, enable authentication and enhance the user experience
- Migrated to a new LDAP cluster and schema using SaltStack
- Implemented MIT Kerberos in the environment using SaltStack

### SolvereOne and HouseCall IT

SYSTEMS ADMINISTRATOR

Dulles, Virginia and Washington D.C.

Jun 2013 - Oct 2015

- Maintained and designed secure network deployments
- Deployed and maintained Windows user and application systems
- Managed Linux administration

## Education

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### Arizona State University

PH.D. IN ELECTRICAL ENGINEERING

Tempe, Arizona

Aug 2019 - PRESENT

- Pursuing Ph.D. in Electrical Engineering
- Focus on Electromagnetics, RADAR, Communications and satellite systems
- Completed Masters In Passing May 2021

### Brigham Young University

B.S. IN ELECTRICAL ENGINEERING

Provo, Utah

Sep 2015 - Apr 2019

- Math Minor

### Thomas Jefferson High School for Science and Technology

HIGH SCHOOL ADVANCED STUDIES DIPLOMA

Alexandria, Virginia

Sep 2011 - Jun 2015

- Designed NFC System for Senior Research Project
- Ranked number one high school in the United States

## Projects

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### Low SWaP Cubesatellite Radio

PHOENIX/ELYSIUM RADIO

CURRENT

- Continuing developing of low size, weight and power cubesatellite radio
- Designing high performance radio supporting spread spectrum communication
- Compatible with many existing protocols and communication implementations

### IEEE AP-S Conference 2019

IEEE AP-S STUDENT DESIGN CONTEST

Atlanta, Georgia

Sept 2018 - July 2019

- Designed low-cost FMCW Radar system for use with Raspberry Pi
- Designed system for use as a class-room demonstration of antenna properties
- Open-sourced design and code for further development and exploration
- Accepted as one of the top 6 finalists in international competition

### CCSDS Kernel Driver

LINUX ADDRESS FAMILY

Jul 2017

- Designed and implemented Linux kernel address family that adds CCSDS Space Packet Protocol support

## Publications

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2021	<b>Distributed Beamforming Techniques for Flexible Communications Networks</b> , 55th Asilomar Conference on Signals, Systems, and Computers	Asilomar, CA
2021	<b>Cardiac and respiratory sensing from a hovering UAV radar platform</b> , IEEE Statistical Signal Processing Workshop (SSP)	Virtual
2021	<b>Rapid Implementation and Demonstration of Radio Applications Using WISCANet</b> , IEEE International Symposium on Personal, Indoor and Mobile Radio Communications	Virtual
2019	<b>Passive CubeSats for remote inspection of space vehicles</b> , Journal of Applied Remote Sensing	
2018	<b>Femtosaurs: Elegant Flight Telemetry for Model Rockets</b> , International Telemetry Conference	Glendale, Arizona

## Competencies

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- Active Directory, LDAP, Kerberos, Cisco IOS, Sophos UTM, Python, Haskell, C, C++, Embedded Development, Windows Server 2008 -2012 R2, CentOS/Ubuntu/Gentoo/RedHat Linux, BSD, Ansys HFSS, Matlab, Mathematica, VMWare vSphere, VMWare View, Microsoft Office 365, Nagios, Apache, NGINX, MySQL, PostgreSQL, HTML5, JavaScript, CSS, Java, Windows XP - 10, ZFS, SaltStack, LTspice, Autodesk EAGLE, Amateur Radio, FCC Licensing, RF Systems, Modulation, Packetization and Framing, GNURadio, Ettus USRP, Nuand BladeRF, RF Analysis, Mentor Graphics Xpedition, RF PCB Layout, RF Testing Equipment (Spectrum, Network Analyzers, etc.), National Instruments AWR, Keysight ADS