

Christi Johnson

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Areas of Interest

- Physics, Electrical Engineering, Mechanical Engineering, Computer Science/Engineering/Software Development, Biometrics Research

Education

BACHELOR OF SCIENCE | MAY 10, 2014 | UNIVERSITY OF TENNESSEE, KNOXVILLE

- Major: Physics

Publications and Presentations

- Abstract and Research Report Paper: *Infrared Airport Runway Lighting is in Your Future*
- Presentation at Scientific Undergraduate Laboratory Internship Symposium: *Airport Infrared Lighting*
- Abstract and Research Report Paper: *Emissivity-Compensated Infrared Optical Pyrometer*
- Presentation at Scientific Undergraduate Laboratory Internship Symposium: *Emissivity Independent Temperature Measurement*
- Invention Disclosure: *Induction Power Supply for Small Heating Systems*
- Presentation at 3rd Annual Oak Ridge Postdoc Association Research Symposium: *Infrared Airport Runway Lighting*
- *Quarterly Research Performance Progress Report (2015 Q3): Ultrasonic Phased Arrays and Interactive Reflectivity Tomography for Nondestructive Inspection of Injection and Production Wells in Geothermal Energy Systems*
- Invention Disclosure: *Induction Power supply for EMAT Transducers and Small Heating Systems*
- Invention Disclosure: *Multi-Resonance Seek and Drive System with a Time Allocating Algorithm*
- Invention Disclosure: *Efficient Induction Power Supply for EMAT Transducers and Small Heating Systems*
- Invention Disclosure: *Optical Array for High-Quality Imaging in Harsh Environments*
- *Progress implementing a model-based iterative reconstruction algorithm for ultrasound imaging of thick concrete*
- *Development of an Ultrasonic Phased Array System for Wellbore Integrity Evaluation and Near-Wellbore Fracture Network Mapping of Injection and Production Wells in Geothermal Energy Systems*
- Patent: US 10,284,021 B2, Lighting System with Induction Power System
- Patent: US 10,742,894 B2, Optical Array for High-Quality Imaging in Harsh Environments
- Patent: US 11,131,502 B2, Heating System with Induction Power Supply and Electromagnetic Induction Power Supply
- R&D 100 Award for Precision Deicer system

Employment and Experience

INTERN | OAK RIDGE NATIONAL LABORATORY | AUGUST 2014 – DECEMBER 2014

- Project: Infrared Airport Runway Lighting, Duties: Circuit design, simulation (LTSpice), modeling, fabrication, assembly, testing
- Project: Portable Induction Heater for 3-D Printers, Duties: Assembly, fabrication, testing, technical drawings (ORCAD Schematic Capture)

INTERN | OAK RIDGE NATIONAL LABORATORY | JANUARY 2015 – MAY 2015

- Project: Infrared Airport Runway Lighting – Generation II, Duties: Circuit design, simulation (LTSpice), modeling, fabrication, assembly, testing, technical drawings (ORCAD/SPICE/Eagle Schematic Capture)
- Project: Emissivity-Compensated Infrared Temperature Measurement, Duties: Software development (LabVIEW), experimental testing, data analysis, spectrometer calibration

POST-BACHELOR RESEARCH ASSOCIATE | OAK RIDGE NATIONAL LABORATORY | MAY 2015 – MAY 2016

- Project: Ultrasonic Phased Arrays and Interactive Reflectivity Tomography for Nondestructive Inspection of Injection and Production Wells in Geothermal Energy Systems, Duties: Software development (LabVIEW and MatLab), Transducer testing and characterization, data collection and analysis
- Project: Portable Induction Heating, Duties: Circuit design, fabrication, assembly, testing
- Project: Ultrasonic Clothes Dryer, Duties: Amplifier design, software development (Arduino/Open Source), circuit design, fabrication, assembly, testing
- Project: Calibration of Ultrasonic Flow Meter, Duties: Technical Drawings (P&ID, Visio), Instrumentation and control design, fabrication, assembly, testing

TECHNICAL PROFESSIONAL | OAK RIDGE NATIONAL LABORATORY | MAY 2016-PRESENT

- Position: Technical Professional—Level 1: 2016-2019, Technical Professional—Level 2: 2019-2023, Technical Professional—Level 3: 2023-PRESENT
- Project: 2019-PRESENT – Biometric Recognition & Identification at Altitude & Range (BRIAR), Role: Range Team—Hardware SME (Phase 0 – 1), Range Team—Team Lead (Phase 2), Duties: Hardware systems design, build, testing, and deployment, lead of electrical and systems designs, tracking and documentation of systems deployment during data collection events with Human Subjects
- Project: 2018-PRESENT – Deceptive Ocular Observable Signals (DOLOS), Role: Hardware SME and Proctor, Duties: Hardware systems testing and deployment and Human Subjects Testing proctor
- Project: 2022 – Gait Recognition, Role: Hardware & Field SME, Duties: Hardware systems and sensors deployment and execution of data collection event with Human Subjects
- Project: 2022 – Jet Blast Deflector, Role: LabVIEW Programmer, Duties: Lead for LabVIEW software development and data acquisition hardware selection
- Project: 2018-2021 – Carbon Fiber Testing Facility, Role: LabVIEW Programmer, Duties: Sensor fabrication and testing, data analysis, field deployment
- Project: 2016-2020 – Ultrasonic Clothes Dryer, Role: LabVIEW Programmer, Duties: Amplifier design, software development (Arduino/Open Source), circuit design, fabrication, assembly, testing
- Project: 2017-2019 – Driver Recognition—Port of Entry, Role: Hardware SME, Duties: Sensor system design and assembly, circuit fabrication, assembly, testing, field deployment, data analysis (MATLAB)
- Project: 2018-2019 – Embedded I&C for Extreme Environments, Duties: Electrical assembly and testing, Mechanical assembly and testing, Full system testing
- Project: 2018-2019 – Wireless Through-wall Communication, Duties: Transducer testing and characterization, control software development (LabVIEW), system/sensor fabrication and testing
- Project: 2016-2018 – Calibration of Ultrasonic Flow Meter, Duties: Technical Drawings (P&ID, Visio), Instrumentation and control design, fabrication, assembly, testing
- Project: 2016-2018 – Inspection of Waveguide tubes for ITER Fusion Reactor, Duties: Mechanical setup, Software development (LabVIEW), Image processing
- Project: 2017-2018 – Precision Roadway Salting Control System, Duties: Mechanical system design, assembly, and fabrication, Electrical system design, assembly, and fabrication, full system bench-testing and field-testing
- Project: 2016-2017 – Ultrasonic Phased Arrays and Interactive Reflectivity Tomography for Nondestructive Inspection of Injection and Production Wells in Geothermal Energy Systems, Duties: Software development (LabVIEW and MATLAB), Transducer testing and characterization, data collection and analysis
- Project: 2016-2017 – Open Source Smart Thermostat with Voltron, Duties: Enclosure/Mechanical design, fabrication and assembly
- Project: 2016-2017 – Portable Induction Heating, Duties: Circuit design, fabrication, assembly, testing

- Project: 2016-2017 – Magnet Recycling from Disassembled Computer Hard drives, Duties: Mechanical System Design, Method testing and evaluation

Scholarly or Professional Memberships

IEEE, Women in Nuclear and Global Security (WiNGS), Committee for Women (CFW), American Physical Society, National Society of Collegiate Scholars, Phi Eta Sigma National Honors Fraternity, Society of Physics Students

References

Philip Bingham

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Hector Santos-Villalobos

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