**DYLAN C. BURNS, Ph.D.**

**Curriculum Vitae**

**EDUCATION**

**Institution, Location Major Degree Year**

University of Vermont, Burlington VT Mechanical Engineering B.S. 2002

University of Vermont, Burlington VT Mechanical Engineering M.S. 2006

University of Vermont, Burlington VT Mechanical Engineering Ph.D. 2011

**ACADEMIC APPOINTMENTS**

* Research Assistant Professor, Univ. of Vermont, Sept. 2023 – Present
* Research Associate, Univ. of Vermont, Sept. 2022 – Aug. 2023
* Lecturer, Mech. Eng. Dept., Univ. of Vermont, Dec. 2019 – June 2023
* Postdoctoral Research Associate, Univ. of Vermont, Sept. 2011 – May 2019
* Adjunct Lecturer, Mech. Eng. Dept., Univ. of Vermont, Sept. 2008 – May 2016
* Research Assistant, Mech. Eng. Dept., Univ. of Vermont, January 2000 – Sept. 2011

**NON-ACADEMIC APPOINTMENTS**

* Design Engineer, m2 inc. Winooski VT, May. 2008 - Present.
* Design Engineer, DB Gear LLC. South Burlington VT, May. 2016 - Present.
* Contract Engineer, Multiple Companies, May. 2008 - Present.

**CERTIFICATIONS, TRAININGS AND PROFESSIONAL REGISTRATIONS**

* EIT
* Online teaching certification through CTL at UVM

**COURSES TAUGHT**

* CE 001 - Statics
* ME 12 (ME 1120) - Dynamics
* ME 14 (ME 1140) - Mechanics of Solids
* ME 44 – Heat Transfer
* ME 083 (ME 1510) - Computational Mech Engr Lab
* ME 111 (ME 2120) - System Dynamics
* ME 124 (ME 2111) - Materials and Mechanics Lab
* ME 144 (ME 2240) - Heat Transfer
* ME 161 (ME3390) - Modern Manufacturing Processes
* ME 171 (ME 2310) - Design of Elements
* ME 270 (ME 3170) - Structural Dynamics
* ME 3993B - IS: Manufacturing

**GRANT SUPPORT**

Project Title: Augmented Reality Integrated Sensing System for Cold Regions

Source of Support: SPARK VT

Project Location: University of Vermont

Role on Project: Engineer/Technician

Total Award Amount: $45,000

Duration: 2022- 2023

Status: Applied

Project Title: Research and Testing of Existing of Continuous Wave Sensor

Source of Support: Subsurface Instruments, inc.

Project Location: University of Vermont

Role on Project: PI

Total Award Amount: $15,000

Duration: 4/1/2023- 6/30/202

Status: Approved

Project Title: Surface and Subsurface Topography Identification Using Multifunctional Radar And Hyperspectral Imaging

Source of Support: Cold Regions Research and Engineering Laboratory

Project Location: University of Vermont

Role on Project: Researcher

Total Award Amount: $496,894

Total Award Period Covered: 1/1/2021- 12/31/2023.

Status: Awarded

Title: Dual Polarization GIMA Antenna

Source of Support: US Army with White River Technologies

Project Location: University of Vermont

Role on Project: Researcher

Total Award Amount: $20,000

Total Award Period Covered: 01/1/2020- 12/31/2020.

Status: Approved

Project Title: Radio Frequency Identification (RFID) Technology for Transportation Asset Management

Source of Support: Vermont Transportation Agency

Project Location: University of Vermont

Role on Project: Researcher

Total Award Amount: $87,165

Duration: 9/1/2018- 8/31/2020

Status: Funded

**PUBLICATIONS**

Owen B., Dylan B., Tian X., Dryver H. (2022) Structured radio-frequency beams for sensing and communication applications. *Proceedings of SPIE -* *Radar Sensor Technology XXV.*

Nick H., Wilson E., Dylan B., Tian X., Dryver H. (2022). Improved mechanisms of active magnetic sensing for subterranean target discrimination. *Proceedings of SPIE - Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XXIII, 121161.*

Girard, J., Dryver, H., Dylan, B., Burns, Xia, Tian, X. (2022). Realtime visual-inertial SLAM integrated with radar data to triangulate targets. Proceedings Volume 12125, Virtual, Augmented, and Mixed Reality (XR) Technology for Multi-Domain Operations III; 121250G

N. Hanna, W. Ezequelle, D. Burns, T. Xia and D. Huston. (2022) Phased Array Rotating Magnet Sensing of Subsurface Conductive Material. IEEE International Symposium on Phased Array Systems & Technology (PAST), Waltham, MA, USA, 2022, pp. 1-8.

Girard, J., Burns, D., Huston, D., & Xia, T. (2021). Penetrating radar combined with 3-D imaging for real-time augmented reality sensing and classification. Proceedings of SPIE - The International Society for Optical Engineering, 11759.

Orfeo, D., Burns, D., Huston, D., & Xia, T. (2021). Synthetic ultrawideband orbital angular momentum radar. Journal of Applied Remote Sensing, 15(1).

Orfeo, D., Zhang, Y., Burns, D., Xia, T., & Huston, D. (2021). Ultra-wideband ground penetrating radar with orbital angular momentum control. Proceedings of SPIE - The International Society for Optical Engineering, 11750.

Orfeo, D., Burns, D., Xia, T., & Huston, D. (2021). Y-Stator Vibrating Magnet Antenna. IEEE Transactions on Magnetics, 57(7).

Pereira, M., Burns, D., Orfeo, D., Zhang, Y., Jiao, L., Huston, D., & Xia, T. (2020). 3-D Multistatic Ground Penetrating Radar Imaging for Augmented Reality Visualization. IEEE Transactions on Geoscience and Remote Sensing, 58(8), 5666-5675.

Ezequelle, W., Orfeo, D., Burns, D., Xia, T., & Huston, D. (2020). Active magnetic sensing for subterranean urban target discrimination. Proceedings of SPIE - The International Society for Optical Engineering, 11380.

Orfeo, D., Burns, D., Huston, D., & Xia, T. (2020). Electrically controlled phased array OAM radar. Proceedings of SPIE - The International Society for Optical Engineering, 11408.

Childs, J., Orfeo, D., Burns, D., Huston, D., & Xia, T. (2020). Enhancing ground penetrating radar with augmented reality systems for underground utility management. Proceedings of SPIE - The International Society for Optical Engineering, 11426.

Worley, R., Dewoolkar, M., Xia, T., Farrell, R., Orfeo, D., Burns, D., & Huston, D. (2019). Acoustic Emission Sensing for Crack Monitoring in Prefabricated and Prestressed Reinforced Concrete Bridge Girders. Journal of Bridge Engineering, 24(4).

Orfeo, D., Zhang, Y., Burns, D., Miller, J., Huston, D., & Xia, T. (2019). Bistatic antenna configurations for air-launched ground penetrating radar. Journal of Applied Remote Sensing, 13(2).
Pereira, M., Zhang, Y., Orfeo, D., Burns, D., Huston, D., & Xia, T. (2018). 3D tomography for multistatic GPR subsurface sensing. Proceedings of SPIE - The International Society for Optical Engineering, 10633.

Orfeo, D., Burns, D., Farrell, R., Qin, M., Mitchell, H., Ou, C., Xia, T., & Huston, D. (2018). Mechano-magnetic telemetry for underground water infrastructure monitoring. Frontiers in Built Environment, 4.

Yu, T.Y., Zhang, Y., Orfeo, D., Burns, D., Miller, J., Huston, D., & Xia, T. (2017). Buried nonmetallic object detection using bistatic ground penetrating radar with variable antenna elevation angle and height. Proceedings of SPIE - The International Society for Optical Engineering, 10169.

Zhang, Y., Burns, D., Orfeo, D., Huston, D., & Xia, T. (2017). Rough ground surface clutter removal in air-coupled ground penetrating radar data using low-rank and sparse representation. Proceedings of SPIE - The International Society for Optical Engineering, 10169.

Ahmed, A., Zhang, Y., Burns, D., Huston, D., & Xia, T. (2016). Design of UWB antenna for air-coupled impulse ground-penetrating radar. IEEE Geoscience and Remote Sensing Letters, 13(1), 92-96.

Zhang, Y., Burns, D., Huston, D., & Xia, T. (2015). Sand moisture assessment using instantaneous phase information in ground penetrating radar data. Proceedings of SPIE - The International Society for Optical Engineering, 9437.

Huston, D., Burns, D., Gardner-Morse, J., Montane, P., & Angola, E. (2014). Dual-durometer soft suction foot robot for concrete inspection. Proceedings of SPIE - The International Society for Optical Engineering, 9064.

Huston, D., Cui, J., Burns, D., & Hurley, D. (2011). Concrete bridge deck condition assessment with automated multisensor techniques. Structure and Infrastructure Engineering, 7(7-8), 613-623.

Huston, D., Plumpton, J., Esser, B., Burns, D., Boerger, B., & Selzer, R. (2006). Membrane mask aero and thermoelastic control for proximity lithography. Microelectronic Engineering, 83(4-9 SPEC. ISS.), 923-925.

Esser, B., Huston, D., Spencer, G., Burns, D., & Kahn, E. (2005). Active self-healing wire insulation. Proceedings of SPIE - The International Society for Optical Engineering, 5762, 8-16.

Huston, D., Esser, B., Spencer, G., Burns, D., & Kahn, E. (2005). Hierarchical actuator systems. Proceedings of SPIE - The International Society for Optical Engineering, 5762, 311-319.

Ashikaga, T., Burns, D., O′Brien, P., Schaberg, K., & Huston, D. (2005). Texture analysis of post breast cancer lymphedema ultrasound images obtained using a portable device - A pilot study. Lymphatic Research and Biology, 3(3), 147-155.

**SYNERGISTIC ACTIVITIES**

1. Faculty mentor of multiple senior capstone projects. (2020 - 2023)

2. Faculty advisor for undergraduate students (2010 - 2022)

3. Instructor for robotics program at Edmunds Middle School (2019)

4. Coach and mentor for First LEGO League (FLL) in at the Vermont State Championship (2019)