

# Christopher R. Buford II

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## OBJECTIVE:

Mechanical Engineering major seeking the opportunity to intern with a company that will expand my knowledge and further develop my skills in software development, applied mechanics, and robotics.

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## EDUCATION:

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|---|-----------------------------------|--|------------------------|
| <i>Tennessee State University</i>                           |                                   |  | <i>May 2028</i>        |
| <i>Ph.D. Engineering and Computational Sciences (ENCS)</i>  |                                   |  | <i>ABET Accredited</i> |
| <i>2024 M.Eng. Mechanical Engineering</i>                   | <i>Tennessee State University</i> |  | <i>GPA 3.82</i>        |
| <i>2022 B.S. Mechanical &amp; Manufacturing Engineering</i> | <i>Tennessee State University</i> |  | <i>GPA 3.70</i>        |

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## PROFESSIONAL EXPERIENCE:

**March-August 2025** **Tennessee State University** **Nashville, Tennessee**  
*Graduate Research Assistant - DOE-NNSA MSIPP PRE-CCAP Funded Project*

- Developed Python scripts to generate G-code for various 3D print designs, allowing user-defined input for dimensions and infill densities.
- Characterized each design configuration for performance and printability.
- Assisted students with SolidWorks modeling and developed a comprehensive 3D printing workshop plan.
- Supported students in conducting COMSOL Multiphysics simulations and interpreting results.

**August 2021-December 2024** **Tennessee State University** **Nashville, Tennessee**  
*Undergraduate and Graduate Research Assistant - DOE-NNSA MSIPP PRE-CCAP Funded Project*

- Created different microfluidic channels on SolidWorks for fluid flow testing.
- Used COMSOL to model the effects of varying microchannel geometry on diffusion and mixing of fluids of varying viscosity in microfluidic channels.

**May-August 2022** **Nashville Department of Transportation** **Nashville, Tennessee**  
*Traffic Engineering Intern*

- Surveyed and calibrated traffic control systems on site.
- Created work orders to determine markings and locations of signs.

**May-August 2021** **Los Alamos National Laboratory** **Los Alamos, New Mexico**  
*Robotics Intern*

- Utilized Robot Operating System (ROS) for robotic control and movement.
- Implemented C++ and Linux to program a pick and place demo for a 7° of freedom robot in a virtual environment.

**January 2020-May 2021** **Tennessee State University** **Nashville, Tennessee**  
*Undergraduate Research Assistant*

- Operated an IR Robotic Surveillance System Modeling Simulation. Beta tested a virtual environment modeling and simulation interface used for the Department of Defense.
- Conceptualized design of contested environment.
- Retained robot navigation and path planning.

**May-July 2019** **Missouri University of Science and Technology** **Rolla, Missouri**  
*Undergraduate Research Assistant*

- Aided in the development of a dual drug-loaded core-shell nanofiber enabled by electrospinning for drug delivery.
- Characterized nanofibers by Scanning Electron Microscopy (SEM) at specified flow rates.
- Evaluated length, height, and weight of nanofibers at specified flow rates.

**Oct 2018-Dec 2019** **Tennessee State University** **Nashville, Tennessee**  
*Undergraduate Research Assistant*

- Studied 3D-printing and biosensors and developed a microfluidic biosensor for pesticide detection using 3D printing.
- Gained a general understanding of fabricating microfluidics and immobilizing techniques.

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### **ACTIVITIES & HONORS:**

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National Society of Black Engineers (NSBE) Programs Chair and Torch Chair • Golden Key International Honour Society (Present) • Ronald E. McNair Post-Baccalaureate Achievement Program • Sigma Alpha Pi National Society of Leadership and Success Honor Society (Present) • Tennessee State University Honors College • National Association for the Advancement of Colored People (NAACP) • American Society of Mechanical Engineers (ASME) Executive Board • Rites of Passage • TSU Engineering Alumni Association Parliamentarian (Present) • Scholarships To Attract and Retain Students (STARS) Scholar • POTUS Fellow

### **SOFTWARE SKILLS:**

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C++ • CSS • HTML • Java • JavaScript • Python • Excel • AutoCAD • MATLAB • COMSOL • HOMER