

# Sophia Moak

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314-691-5019

## EDUCATION

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### Vanderbilt University

May 2020

Bachelor's of Engineering in Mechanical Engineering, Minor in History of Art

GPA: 3.72/4.0, Dean's List, Chancellor's Scholar

Relevant Coursework: Mechanical Engineering Design, Basic Aerodynamics, Flight Mechanics, Aircraft Design

## PROJECT EXPERIENCE

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### Vanderbilt Aerospace Design Laboratory

January 2019 – Present

*Student Launch Team*

Nashville, TN

- Building functional subscale and full-scale rockets for interdisciplinary winning NASA sponsored student launch team
- Incorporating innovative payload design for theoretical NASA ice sampling mission using UAV technology

### Center for Scientific Studies in the Arts, Northwestern University

June – August 2019

*Researcher for MRSEC-REU Program funded by NSF*

Evanston, IL

- Designed and fabricated a macro X-ray fluorescence scanning system for preservation of cultural heritage objects using rapid prototyping (3D printing) and machining
- Analyzed x-ray fluorescence spectra to identify composition of bronze in West African sculpture
- Presented successful design findings to 3M sponsor, principal investigator, and mentor

### Center for Rehabilitation Engineering + Assistive Technology

August 2018 – December 2018

*Undergraduate Research Assistant*

Nashville, TN

- Analyzed kinematic stumble response of transfemoral ankle prosthesis using MATLAB to successfully quantify and categorize stumble regimes
- Repaired and troubleshooted Ottobock C-Leg for subject testing

### Merryman MechanoBiology Laboratory

Fall 2017 – Fall 2018

*Undergraduate Research Assistant*

Nashville, TN

- Modeled intracellular tension force mathematically with MATLAB and incorporated image processing
- Designed and fabricated an actuated dual pipette hydraulic microscope system controlled using LabVIEW pressure testing program
- Cultured mice cardiomyocyte cells with varying expressions for mechanical analysis

## PROFESSIONAL EXPERIENCE

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### The Institute for Study Abroad

January 2019 – May 2019

*International Correspondent*

Glasgow, United Kingdom

- Wrote a series of 5 blog articles concerning life abroad as it pertains to identity, diversity, and culture
- Compiled 30 professional photos a month for use on the IFSA website and brochure material

### Chain of Rocks Water Treatment Plant, St. Louis City Water Division

May 2018 – August 2018

*Mechanical Engineering Intern*

St. Louis, MO

- Created a digital database using SCADA/WIMS for instrumentation control and data collection
- Designed and implemented an improved stainless-steel cabinet containing turbidity instrumentation using AutoCAD and machine shop fabrication

### Nexmatix LLC

May 2017 – August 2017

*Summer Intern*

St. Louis, MO

- Assembled, fabricated, and installed smart pneumatic valve machine technology
- Contacted business connections to secure partnerships and marketed to potential sales partners

## LEADERSHIP AND SERVICE

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### WRVU Independent Radio

Spring 2017 – Present

*Music Director, Executive Coordinator & Staff Writer*

Nashville, TN

- Worked for two years as an executive staff member for independent college radio station to schedule events for station member participation and opportunities for music writing experience
- Coordinated specialty music programming to facilitate network with the local Nashville community

### Vanderbilt Student Volunteers for Science

Spring 2017 – Present

*Team Leader*

Nashville, TN

- Taught interactive lessons for grade to middle school classes of 25 students focused on foundational scientific topics
- Led a team of four undergraduate students to plan effective lessons and teach as a collective group

## SKILLS

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*Software:* Creo Parametric (ProE), AutoCad 2017, SolidWorks, LabVIEW, Mathematica, Microsoft Office Suite

*Programming:* MATLAB, Python

*Additional Skills:* Vanderbilt Commodore Orchestra violinist, artist, Society of Women Engineers, racquetball player, French speaker, machine shop fabrication, rapid prototyping/additive manufacturing (3D printing)