Charlie Wendell Grinton, Jr.

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Citizenship: United States
Veterans Status: N/A
Clearance: N/A

EDUCATION:
Ph.D., (August 2020), Virginia Tech, Blacksburg, VA United States
Major: Civil Engineering
90 Credit Hours Completed
GPA: 3.83 of a maximum 4.0

M.S., (August 2018), Virginia Tech, Blacksburg, VA United States
Major: Civil Engineering
30 Credit Hours Completed
GPA: 3.91 of a maximum 4.0

B.S., (August 2014), North Carolina A&T State University, Greensboro, NC United States
Major: Civil Engineering
134 Credit Hours Completed
GPA: 3.4 of a maximum 4.0

Relevant Coursework:

Advanced Coastal Hazards	Construction Engineering and Management
DRRM Seminar	Construction Engineering
Policy Decision-Making in STEM	Reinforced Concrete
Statistics in Research	Construction Materials and Methods
IT for Infrastructure	Construction Materials Lab
Sustainable Infrastructure Systems	Dynamics
Sustainable Facility Systems	Surveying
Human Behavior & Infrastructure Systems	Statics
Methods in Construction Research	Numerical Methods and MATLAB
CII Best Practices	Fundamental Principles of Environmental
Policy Making for Infrastructure	Engineering
Smart Sustainable Infrastructure	Steel Design
Construction Professional Competencies	Senior Design (Capstone Project) Leadership in
Architecture, Engineering, and	Engineering Design and Ethics
Construction	

RESEARCH PROJECT: Exploratory Study of the Neurocognitive Response of Marginalized Savvy and Unsavvy Individuals to Energy Feedback Messages (Fall 2022): This research project was completed in collaboration with a neuroscience professor from Carnegie Mellon University. I was responsible for creating a message bank of 100 energy feedback messages with different themes and categories to potentially test. Next, due to the scope of the project and the necessary repetition requirements for fNIRS (brain imaging) studies, I reduced the messages that we would test to messages about monetary gains and monetary losses. I then

recruited 30 Virginia Tech graduate students to participate in my study as each of these individuals have to pay their energy bills in an inflated market. Also, graduate students generally make just enough to cover their bills. What I found was messages about monetary gains produced more neurocognition in the brain compared to messages about monetary losses.

RESEARCH PROJECT: Exploratory Study of Virginia Drivers Neurocognitive Response to Non-Traditional Traffic Safety Messages (Fall 2022): This research project was completed in collaboration with the Virginia Transportation Research Council (VTRC) to better understand driver's response to non-traditional traffic safety messages using fNIRS (brain imaging). I was responsible for taking this study a step further by analyzing the neurocognitive response of Virginia drivers to non-traditional traffic safety messages. To do so, I leveraged Python to create brain network analysis visuals that illustrated the functional connectivity in the prefrontal cortex (front part of brain). With these results, I was able to highlight that different messages create different responses in the brain. Also, I was able to highlight that neuroscience can potentially act as a proxy to determine which types of messages leverage specific prefrontal cortex subregions to interpret and analyze non-traditional traffic safety messages.

RESEARCH PROJECT: Exploratory Study of the Equity Gaps in FEMA's WEAs (Spring 2022): This research project was completed in collaboration with Mark Lucero, who is the Chief Engineer of FEMA's emergency alerting system (Integrated Public Alert and Warning System, IPAWS). Mr. Lucero graciously sent me a publicly-available Microsoft Excel spreadsheet of every Wireless Emergency Alert (WEAs) that has ever been sent since their creation in 2012 (more than 61 thousand alerts). I was responsible for filtering through this dataset to pull out storm surge warning WEAs (SSW WEAs) that were only sent to Virginia. To do so, I leveraged Microsoft Excel's "Sort & Filter" function which allowed me to not only filter through each Emergency Alert Code (EAS) and select "SSW", but it also allowed me to filter through the FIPS codes assigned with each WEA and select only the FIPS codes in correspondence with Virginia. Out of this entire dataset, such filters resulted in 9 total SSW WEAs. Also, each WEA has a polygon of coordinates attached to it to highlight which geographic area each WEA is being sent to. Next, I leveraged GIS to visually illustrate where these 9 SSW WEAs have been sent in comparison to the poverty-stricken areas in coastal Virginia. I found that all 9 SSW WEAs were sent at the exact same time in response to Hurricane Dorian and they were all geographically located along coastal Virginia, which contains some of the highest areas of poverty in the state.

RESEARCH PROJECT: Revitalization of New Phoebus Waterfront Park in Hampton, Virginia (Fall 2021): This research project was completed in collaboration with the City of Hampton, Virginia Tech, and the American Flood Coalition (AFC). The purpose of this project was to 1) improve urban flood resilience efforts, 2) identify diverse sources of possible community input and conducting outreach to key groups, organizations, or residents in the Phoebus, Virginia, and 3) develop materials such as spatial drawings to lay out multiple configurations for site elements, based on input from the community, local partners, and City of Hampton. I was able to travel to Phoebus, Virginia to talk with city leaders, community members, and members from AFC to determine potential opportunities for improving the flood resilience of the park, as well as other potential community events that could be held at the park. Also, through this project, local plants were replanted and rip rap was updated to provide a buffer from any potential flooding issues. Lastly, through the use of AutoCAD, I was able to provide the city of Hampton and AFC with site drawings of potential events that can be held at the park, along with dimensions and placement of things such as stages, chairs, tables, etc.

CLASS PROJECT: Advanced Coastal Hazards (Fall 2021): This class project was completed for a graduate level coastal hazards course. The purpose of the project was to research and present on a coastal hazard and ways

in which we could improve said hazard. I researched storm surge and ways to improve storm surge. Since part of my dissertation research deals with Wireless Emergency Alerts (WEAs), I elected to use WEAs. I was able to highlight that using WEAs to alert the public of an incoming natural disaster or emergency can help them to stay safe and better prepared before, during, and after a natural disaster or emergency.

STUDENT ORGANIZATION PROJECT: ASCE 2018 Conference T-Shirt Design Competition (Spring 2018): For this project, I was tasked to create a t-shirt design for the 2018 ASCE T-Shirt Design Competition. Initially, I drew a bridge design where construction workers were working on a bridge and their positioning spelled out "NCAT". Next, to turn this design digital so that it could be printed on a t-shirt, I outlined the drawing with a black fine point sharpie pen and then scanned the image into the computer. After, I used the "Paint" computer application to add color to the drawing and to remove any eraser marks or stray lines. Once the design was completed, I took the design to a local print shop to get the design placed onto a t-shirt. At the competition, my design ended up winning first place of 10 universities.

STUDENT ORGANIZATION PROJECT: ASCE 2018 Conference Steel Bridge Competition (Spring 2018): Collaborated with a group of 20 civil engineering students from North Carolina A&T State University to design a 21-foot bridge out of steel. As co-captain, I was responsible for delegating the design/architect, build, funding, and outreach teams to ensure everyone was aware of our available budget, potential sponsors, meeting times, design iterations, as well as ASCE competition rules. Also, I assisted with presenting our finished product to a panel of judges who evaluated our product based on aesthetics, construction speed, height, and weight.

STUDENT ORGANIZATION PROJECT: ASCE 2018 Conference Concrete Cornhole Competition (Spring 2018): Collaborated with a group of 10 civil engineering students from North Carolina A&T State University to construct a cornhole board made from concrete for 2018 American Society of Civil Engineers (ASCE) Conference. As co-captain, I was responsible for delegating design and construction teams to ensure the cornhole board met the material and size specifications, in accordance to the 2018 ASCE Conference Concrete Cornhole Competition rules. Also, I assisted with presenting our finished product to a panel of judges who evaluated our product based on aesthetics, mix design, and technical design.

CLASS PROJECT: Capstone Project (Spring 2018): Collaborated with a group of 4 civil engineering students from North Carolina A&T State University to prepare and execute a due diligence study for the development of a 50,000 square foot warehouse, which was comprised of 20 55-foot truck bays, constructed with PEMB (Pre-Engineered Metal Building), and used to produce raw materials for a furniture company. Wrote a 35page paper and presented design to a class of 25 students.

WORK EXPERIENCE:
Virginia Tech College of Engineering (08/2018 – 05/2024)
750 Drillfield Drive, Blacksburg, VA 24061 United States
Graduate Research Assistant with STILE Research Lab
Salary: 19,773 USD stipend, **Hours per week:** 20
Supervisor: Frederick Paige (843-318-9593); **Okay to contact this Supervisor:** Yes

Duties, Accomplishments and Related Skills:
DATA ANALYSIS: Identified equity gaps in FEMA's current storm surge warning Wireless Emergency Alerts. Leveraged fNIRS to highlight non-traditional traffic safety messages that included emotion, namely humor or negative emotion, had influence on evoking safer driving behaviors. Leveraged fNIRS to highlight which combinations of energy feedback messages were the most effective in evoking energy saving behaviors.

Conducted a descriptive policy analysis on prior energy policies to showcase how previous legislature has shaped the formation of energy feedback devices. Conducted a content analysis on the different types of message design theories.

QUALITATIVE RESEARCH: Leveraged Python to code results for the brain network analysis of the nontraditional traffic safety messages. Leveraged Python to code results for the brain network analysis of the energy feedback messages. Leveraged Python and Natural Language Processing to code results the most frequent words included within FEMA's Wireless Emergency Alerts.

QUANTITATIVE RESEARCH: Quantified graduate students' perceptions of the effectiveness of energy feedback messages using post-task surveys.

KEY ACCOMPLISHMENTS: Presented to Virginia Tech donors regarding the application of artificial intelligence, machine learning, and deep learning models to analyze how to improve the design of FEMA's Wireless Emergency Alerts; published a journal paper on the equity gaps of FEMA's Wireless Emergency Alerts. Wrote several papers that were accepted to and presented at conferences.

Virginia Tech Disaster Resilience and Risk Management Fellowship (08/2021 – 08/2023)
1405 Perry Street, Blacksburg, VA 24061 United States
DRRM Fellow
Salary: 34,000 USD stipend, **Hours per week:** 20
Supervisor: Sharon Stacy (540-231-8204); **Okay to contact this Supervisor:** Yes

Duties, Accomplishments and Related Skills:
DATA ANALYSIS: Identified equity gaps in FEMA's current storm surge warning Wireless Emergency Alerts.

QUALITATIVE RESEARCH: Leveraged Python to code results for the brain network analysis of the nontraditional traffic safety messages. Leveraged Python to code results for the brain network analysis of the energy feedback messages. Leveraged Python and Natural Language Processing to code results the most frequent words included within FEMA's Wireless Emergency Alerts.

QUANTITATIVE RESEARCH: Quantified the language barriers of emergency management information and perceptions of individuals from a low-income community in Hampton, Virginia.

KEY ACCOMPLISHMENT: Published a journal paper on the equity gaps of FEMA's Wireless Emergency Alerts.

Department of Energy Wind Energy Technology Office (06/2023 – 08/2023)
1000 Independence Ave SW EE-4WE Washington, DC 20585
Intern with DOE Wind Energy Technology Office
Salary: 950 USD weekly stipend, **Hours per week:** 40
Supervisor: Liz Hartman (202-341-5889); **Okay to contact this Supervisor:** Yes

Duties, Accomplishments and Related Skills:
KEY ACCOMPLISHMENTS: Participated in activities connected to the preparation and release of 2023 editions of the Land-Based Wind Market Report, Offshore Wind Market Report, and Distributed Wind Market Report. Reviewed 3 lab-authored reports and PowerPoint slide deck; provided edits and

comments on content, layout, etc.; collaborated with wind communications lead to develop report release and dissemination plan; collaborated with wind communications lead on DOE press release and prepare state-specific press releases; authored 2–3 blogs on the report content; developed social media strategy and draft content for social media posts; collaborated with EERE staff on media pitch; tracked media coverage of reports after release.

Gilbert Engineering Company (06/2019 – 08/2019)
638 S Meeting St, Statesville, NC 28677, United States
Summer Construction Intern
Salary: 14 USD Per Hour, **Hours per week:** 40
Supervisor: John Gilbert, III (704-872-0986); **Okay to contact this Supervisor:** Yes

Duties, Accomplishments and Related Skills:
KEY ACCOMPLISHMENTS: Shadowed project manager and job superintendent to better understand the ins and outs of a construction project. Operated heavy machinery, namely Lull and Skid Steer, to assist with installing water pumps for several wastewater treatment plants in Elkin, North Carolina. Created and delivered submittal folders for 3 different construction project bids.

G.L. Wilson Building Company (05/2016 - 08/2018)
190 Wilson Park Rd, Statesville, NC 28625, United States
Construction Intern
Salary: 10 USD Per Hour, **Hours per week:** 50
Supervisor: Julia Wilson (704-872-2411); **Okay to contact this Supervisor:** Yes

Duties, Accomplishments and Related Skills:
KEY ACCOMPLISHMENT: Shadowed project manager and job superintendent to better understand the ins and outs of a construction project. Gained experience with placing and finishing concrete. Leveraged construction management software such as Procore and Blue Beam to review and analyze 2D site plan drawings, as well as generating plan markups and takeoffs for cost estimating purposes. Gained experience with optimizing project schedules, proposals, and cost estimation tables in support of the project manager. Collaborated with construction workers to survey and grade project sites, as well as formed footers to place concrete.

SKILLS:
Programming and Scripting Languages – Python, MATLAB

Engineering Design Platforms – AutoCAD

Construction Management Software – Blue Beam, ProCore **Hosting**

Platforms - Windows, MacOS

Data Analytics - Pandas, NumPy, SciPy, Matplotlib, Seaborn

Machine Learning – NLTK, HuggingFace

ACTIVITIES & LEADERSHIP ROLES:

Center for the Enhancement of Engineering Diversity (CEED) Graduate Ambassador (September 2021 – Present)
- Assisted with recruiting efforts of underrepresented students
- Served on a variety of panels to inform prospective students
- Informed prospective students about life in and around Virginia Tech
- Informed prospective students about available resources for graduate students New Horizon's Graduate Scholars (NHGS) Peer Mentor (April 2019 – Present)
- Mentored more than 10 incoming graduate students transitioning to graduate school at Virginia Tech

Panelist for 2020 HBCU/MSI Summit at Virginia Tech (October 2020)
- Served on panel via Zoom
- Engaged with current undergraduate HBCU/MSI students by answering questions and providing them with experiences and insights from graduate life at Virginia Tech

Panelist for 2019 HBCU/MSI Summit at Virginia Tech (October 2019)
- Engaged with current undergraduate HBCU/MSI students by answering questions and providing them with experiences and insights from graduate life at Virginia Tech

Concrete for Kids with Tau Beta Pi Honors Society at Virginia Tech (September 2019)
- Taught 5th grade students from Harding Avenue Elementary (Blacksburg, Virginia) about concrete and helped them make 12" long by 1" wide concrete beams for a concrete strength competition

Intramural Sports at Virginia Tech (August 2018 – Present)
- Competitive 5v5 Men's Basketball (Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022)
- Competitive 7v7 Men's Flag Football (Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022, Fall 2023)
- Competitive 8v8 Co-Rec Kickball (Spring 2021, Spring 2022, Spring 2023)
- Competitive 7v7 Co-Rec Flag Football (Fall 2021, Fall 2022, Fall 2023)
- Competitive 7v7 Men's Ultimate Frisbee (Spring 2022, Fall 2023)
- Competitive 7v7 Co-Rec Ultimate Frisbee (Spring 2021, Spring 2022, Fall 2023 – won championship)

Virginia Tech Graduate Research Assistant (August 2018 – Present)
- Research Group: Society, Technology, Infrastructure, and Learning Environments (STILE)
- Topic: improving the communication of information about civil infrastructure to public stakeholders to optimize the quality of life of residents
- KEY ACCOMPLISHMENTS: Equity gaps are present within FEMA's Wireless Emergency Alerts. Residents are more likely to perceive simple energy messages as effective, compared to more complex energy messages. Non-traditional traffic safety messages that included emotion and statistics had influence on evoking safer driving behaviors. Sentiment analysis and keyword identification methods were used on FEMA's flash flood warning Wireless Emergency Alerts (FFW WEAs) and tweets during Hurricane Harvey to better understand how the public communicates about emergency response information.

Honors and Awards:

2022 – 2023 Outstanding Doctoral Student of the Year for the Virginia Tech College of Engineering (March 2023)
- Received 500 USD and a certificate

Dr. Fred J. Long, Jr. Scholarship (August 2022)
- Received 1000 USD towards tuition-related expenses

Davenport Leadership Fellowship (August 2022 – Present)
- Received 363.88 USD per month for the 2022-2023 academic year

Bill Anderson Fund (BAF) Fellowship (September 2021 – Present)

- Apart of a cohort of underrepresented graduate students across the United States with passion in emergency management

Disaster Resilience and Risk Management (DRRM) Fellowship (August 2021 – Present)
- Received 34,000 USD stipend per year

American Flood Coalition (AFC) Fellowship (August 2021 – January 2022)
- Received 325 USD per month

Lt. General Julius Becton Jr. Scholarship Recipient (August 2021)
- Received 5,000 USD scholarship towards tuition-related expenses

Civil and Environmental Engineering (CEE) Research Award for Master's Poster Presentation (May 2021, May 2023)
- Received 1st place in poster presentation competition (May 2022)
- Received 2nd place in poster presentation competition (May 2021)

Paul E. Torgersen Research Excellence Award (May 2021, May 2023)
- Received 1st place in technical poster presentation competition (May 2023)
- Received 300 USD for 1st place finish (May 2023)
- Received 3rd place in technical presentation competition (May 2021)
- Received 50 USD for 3rd place finish (May 2021)

Davenport Leadership Fellowship (August 2020 – May 2021)
- Received 363.88 USD per month for the 2020-2021 academic year

GEM Associate Fellowship with the National GEM Consortium (August 2018 – Present)

New Horizons Graduate Scholar (August 2018 – Present)
- Virginia Tech College of Engineering
- Provided funding for graduate research assistantship throughout Master's and PhD degrees