



# ACHIEVE

RESEARCH & GRANTS ACTIVITIES @ ROBERT MORRIS UNIVERSITY • 8th Edition Volume 1 • Fall 2022

## Vice President's Message

The Research & Grants Administration (R&GA) is happy to share the Fall 2022 issue of the R&G Newsletter. We hope this newsletter will play an important role in showcasing research & grant activities at RMU.

In this issue, we feature summaries of eight grant applications submitted by RMU faculty from January to August 2022. A few grant applications are not listed due to their sensitive nature. The summaries presented here are in the Principal Investigators' own words. Some of these applications have been awarded and others are pending. For this period, a record twenty three opportunities were discussed/explored and seventeen proposals were submitted. Most grant proposals were written by our faculty and staff with support from Research & Grants Administration, and Financial Operations. As always, supporting institution data was provided by the Office of Institutional Research.

The Research & Grants Administration encourages all faculty and staff to pursue research and participate in various research & grants related activities. The R&GA is available to help you answer questions related to grant searching, writing, budgeting, and managing. Please contact us with your questions, comments, suggestions, and concerns.

Have a great Fall semester!

Sincerely,

**Sushil Acharya**  
*Professor of Software Engineering  
Vice President for Grants, Research,  
and Global Initiatives*



## > Multiscale, Physics-based Approach for Blast and Blunt Traumatic Brain Injury Prediction and Prevention

**Grant Agency: Department of Defense - US office of Naval Research**

This grant proposal is part of a larger collaborative program called PANTHER. PANTHER is an interdisciplinary research program focused on addressing military-relevant traumatic brain injury (TBI). This proposal adds new projects to the PANTHER program to accelerate its mission and to provide a unique central hub for the Department of Defense for advanced detection and prevention of all TBIs, including blunt and blast trauma. Robert Morris University has been part of the PANTHER program since 2020, and as part of this new proposed work, we will be involved in the development of new computational tools to assess the risk of blast-induced TBI in military training exercises and operational environments, providing critical guidance to maintain the safety of military personnel.



**Rika Carlsen**  
*Principal Investigator  
Assoc. Professor of Mechanical  
and Biomedical Engineering  
Director, CIO  
SEMS*

### Grant Proposal Activities - January to August 2022



**Grant Opportunities  
Explored**



**Grant Proposals  
Submitted**



**Nader Kesserwan**  
Principal Investigator  
Assistant Professor of  
Software Engineering  
SEMS



**Armand Buzzelli**  
Co-Principal Investigator  
Director, Campus Recreation  
Student Affairs



**Samantha Monda**  
Co-Principal Investigator  
Assoc. Professor of Psychology  
Department Head, Psychology and  
Health Science  
SNEHS



**Andrew Ames**  
Co-Principal Investigator  
Professor of Media Arts  
SIHSS



## Generating STEM Interest Through esports for K-12 Students

Grant Agency: **PAsmart Advancing Computer Science and STEM Education Grants**

RMU submitted a grant application entitled “**Generating STEM interest through esports in K-12 students**” to the PAsmart grants program, Pennsylvania Department of Education. The funding would allow RMU to focus on imparting STEM/esports knowledge and technologies to high school students with the expectation that it will generate interest in STEM/CS. Partnering schools have already started or will soon start computing and technology education enabling us to reach out to students and teachers with suitable backgrounds and strong interests. Our six (6) partner schools have a good percentage of marginalized and a higher percentage female student groups. By reaching out to these schools we will be increasing diversity and will be providing a highly inclusive environment for students of all groups.



**Tim Jones**  
Co-Principal Investigator  
Assistant Professor of Media Arts  
Director, Academic Media Center  
SIHSS



**Chad Wertley**  
Co-Principal Investigator  
Assistant Professor of  
Communication  
SIHSS



**David Synowka**  
Co-Principal Investigator  
Director, Sports Management  
Program  
Professor of Sport Management  
SBUS



## Boost Students’ Interest in STEM through esports

Grant Agency: **National Science Foundation (NSF)- IUSE**

RMU submitted a grant application entitled “**Boost Students’ Interest in STEM through esports**” to the National Science Foundation (NSF). The proposal was submitted in response to the solicitation program “**Improving Undergraduate STEM Education**” (IUSE). The funding would allow RMU to develop an esports curriculum, acquire the technology to run it and deliver it to the middle schoolers in 8 school districts in the region. The use of such an academic STEM/esports program helps RMU and the region in the long run to reach multiple objectives:

- Improve the recruitment and retention of underrepresented groups in STEM, specifically female students.
- Increase middle-school students’ interest and knowledge in STEM fields.

## ➤ **Discovering and Developing Talent for US DoD Cyber Workforce**

Grant Agency: **Interfaith America (Faith and Health initiative)**

The grant is being used to conduct a study on the effects of organizations' faith dispositions on employees' perceptions of being supported or cared for by their organizations generally and in terms of their health and wellbeing, with a specific focus on pandemic period. The grant includes an allowance for a student intern and Joshua Brown, a student in the Masters in Organizational Leadership (Nonprofit Leadership Track) was selected to assist Dr. Allen with the project. The study addresses the increasingly popular and important topic of faith and spirituality in the workplace where employees increasingly seek meaning, purpose, and connection at work. Organizations' approaches to employees' faith related issues and expression in the workplace vary across four distinctive types (e.g., secular, preferential, neutral, encouraging). When employees feel supported by their organization, they are more likely to stay with, be satisfied with their job, and be committed to the organization. Therefore, the study seeks to examine how U.S. organizations' differing policies and approaches to faith expression impacts employees' perceptions of their organizations.



**Stuart Allen**  
*Principal Investigator*  
Professor of Organizational  
Leadership  
SIHSS

## ➤ **Diversity Initiative to Validate Education as a Special Education Career Pathway (DIVE)**

Grant Agency: Pennsylvania Bureau of Special Education

The Pennsylvania Training & Technical Assistance Network (PATTAN) is administering the Developing Future Special Educators Grant from the Bureau of Special Education. This grant opportunity is designed to support one piece within a multi-step approach to address the national special education teacher shortage. The \$20,000 grant was awarded to Dr. Vicki Donne and staff at two local education agencies, The Neighborhood Academy and DePaul School for Hearing & Speech. The goal is to increase the interest of secondary students in pursuing a career as a special educator by providing experiential learning that supports the success of students with disabilities. The grant runs from 2022-2024.



**Vicki Donne**  
*Principal Investigator*  
Professor of Education  
SIHSS

## ➤ **SFS at RMU: Excellence, Ethics, and Strategic Thinking for Cybersecurity Service**

Grant Agency: **U.S. National Science Foundation (NSF)**

This grant proposal is to establish a new CyberCorps® Scholarship for Service (SFS) program at RMU to recruit and develop cyber talent with strong ethics and strategic thinking skills to defend America's cyberspace. The proposed SFS project is requesting NSF funding for 5 years to support 4 cohorts for a total of 20 selected students including 14 for the BS Cybersecurity program and 6 for the 4+1 accelerated MS Cybersecurity at RMU to achieve excellence and readiness for professional cybersecurity service. The proposed project will recruit highly-qualified and diverse student talent from the large cyber student pools at RMU and its partnership community colleges, implement curriculum innovations to provide in-depth cyber research experience and training in cyber ethics and strategic thinking for SFS students, and implement a comprehensive service-oriented mentoring model in partnership with government employers to strengthen students' professional and ethical readiness for government service.



**Ping Wang**  
*Principal Investigator*  
Professor of Computer and  
Information Systems  
SIHSS



**Sushma Mishra**  
*Co-Principal Investigator*  
Assoc. Professor of Computer and  
Information Systems  
SIHSS



**Francis Hartle**  
*Co-Principal Investigator*  
Assistant Professor of Criminal Justice  
Assistant Dean  
SIHSS

## ➤ **Discovering and Developing Talent for US DoD Cyber Workforce**

Grant Agency: **Department of Defense**

This proposal is to request grant funding from the U.S. Department of Defense (DoD) Cyber Scholarship (CySP) program to support selected RMU student scholars and faculty research on cybersecurity education for 2022-2023. The proposed CySP program at RMU, a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) designated by NSA/DHS, will adopt and implement a comprehensive mentoring model to enable selected student scholars to succeed academically and professionally. The proposed project will recruit and develop cyber talent among RMU students for the DoD cyber workforce and enhance the national pipeline and education for qualified cybersecurity professionals. Student scholars and graduates supported by the CySP program will intern and serve in professional positions of cybersecurity with DoD agencies.



**Ping Wang**  
*Principal Investigator*  
Professor of Computer and  
Information Systems  
SIHSS



**Rika Carlsen**  
*Principal Investigator*  
Assoc. Professor of Mechanical and  
Biomedical Engineering  
Director, CIO  
SEMS

## ➤ **Fasciculus Axon Collagen Tract Multiscale Imaging cost viable accurate validated white matter connectome and 3D collagen maps of human and nonhuman primate via micro MRI, histology, and deep learning**

Grant Agency: **National Institute of Health (NIH)**

The goal of this project is map the structure of the mammalian brain using advanced imaging techniques and deep learning methods. Achieving accurate, cost-viable, full-scale mapping of brain connectivity has been a challenge. With recent technological advances made by our collaborative project team, we are now able to acquire highly detailed structural images of nervous tissue. This project will utilize imaging technologies developed by the team as well as develop new technologies to obtain accurate structural maps of the brain, which will provide critical data for better understanding neurocognitive disorders that affect brain connectivity.

**In addition, proposals were also submitted to the Grable Foundation (CIO), NIST (SEMS), UPenn (SEMS), and Staunton Farm Foundation (SNEHS).**

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