



2021 GABBR LSAMP/MAKERS S-STEM Joint Mini-Conference
Auburn University, Auburn University Montgomery, Southern Union State
Community College
Saturday, April 17, 2021, 9:00 am – 12:00 pm CST
Online via Zoom: <https://auburn.zoom.us/j/81109735829>

9:00 – 9:05 a.m.	Welcome and Introductions	
9:05 – 10:05 a.m.	MAKERS Community-Based STEM Prototype Presentations	<p>AU Program <i>9:05 – Cluster 1: Samuel Looney, Shaniya Holley</i> <i>9:17 – Cluster 2: Irene Hounblame, Henry Tsai, Alex Grady</i> <i>9:29 – Cluster 3: Jordan Bailey</i> <i>9:41 – Cluster 4: Savanna Johnson, McFero Grace, Alex Gamble</i></p> <p>AUM Program <i>9:53 – Kennedy Smith, Ryan Loomis, Thinh Truong, Brady Waller, Jasmine Walker, Daveenyah Primm, Chyna Woods, Jada Mack, Shallom Kim</i></p>
10:05 – 11:05 a.m.	Student Research Presentations	<p><i>10:05 – Analysis of a Community Lake for Water Quality Indicator Bacteria (AUM)</i> <i>10:17 – Molecular Characterization and Potential Application of Macromolecule-Degrading Soil Bacteria (AUM)</i> <i>10:29 – Influence of Environmental Parameters on Growth of Macromolecule-Degrading Bacillus Species (AUM)</i> <i>10:41 – Production of Microbial Electricity Using Sediment and Soil Samples (AUM)</i> <i>10:53 – Finite State Automata (AUM)</i></p>
11:05 – 11:15 a.m.	Sharing Experiences	<i>Dremere Woods, AU MAKERS</i>
11:15 – 11:20 a.m.	Guest Speaker Introduction	<i>Dremere Woods Introduces Mr. Lewis</i>
11:20 – 11:50 a.m.	Guest Speaker Presentation	<i>Mr. Charles Lewis, Senior Project Manager at HPM</i>
11:50 – 12:00 p.m.	Speaker Q & A	
12:00 p.m.	Adjourn & Evaluation	https://tinyurl.com/SP21VirtualConf

I. [MAKERS S-STEM Prototype Showcase](#)

Title: DogTracks – An Activity Tracker for Man’s Best Friend

College/University: Auburn University

Presenters: Shaniya Holley, Samuel Looney

Mentor(s): Dr. Overtoun Jenda

Description: DogTracks is a Bluetooth collar that contains a tracking device for your animal and connects to the doggy door of your home. It has the capability of opening and/or locking a doggy door based on the proximity of your dog and helps to mitigate the risk of stray animals getting in. DogTracks is also an activity tracker that can be used to monitor your dog’s health with similar functionality to smartwatches and can help you to keep your dog in shape based on movement data and your dog’s activity level.

Title: A Trash Can, for the Greater Good

College/University: Auburn University

Presenters: Irene Hounblame, Henry Tsai, Alex Grady

Mentor(s): Dr. Overtoun Jenda

Description: Taking out the garbage is a necessary household task, and although it may seem simple, it can present some difficulties. This redesigned garbage can will have a platform that will raise and lower the trash bag and its contents. This will limit the strain that sometimes accompanies bending over and lifting the trash out of the can. Garbage bags can fit tightly against the walls of the container and create a suction effect, making it difficult to remove. When incorrectly predicting the weight of the bag combined with the suction effect, the force required to lift the bag is greatly increased. This simple task of taking out the trash can become near impossible or even cause injury to those with preexisting conditions such as a bad back, broken arm, bad wrist, etc. This project is designed to be beneficial for those with heavyweight motor difficulties, such as people with disabilities, the elderly, and small children.

Title: MAKERS Political App

College/University: Auburn University

Presenters: Jordan Bailey

Mentor(s): Dr. Overtoun Jenda

Description: Despite historically low rates of young voter turnout, young voters, particularly college-aged students, are increasingly expressing interest in community involvement and political engagement. Our project aims to create a social media-type platform for students to stay engaged with student political organizations as well as providing a source for accurate information on current events. Features of the app include the ability to follow other users or groups of interest, interact with posts via tagging/liking/comments, create posts, receive notifications of interaction with your posts. Eventually, the app should include some strategy for eliminating inaccurate or harmful content posted to the app and maintaining an accurate and diverse range of sources for news and fact checking. Additionally, it would be a goal of ours to get local, state, and national representatives and community leaders to participate on the app to create a line of communication between students and policy makers.

Title: Adjustable Solar Power Phone Case

College/University: Auburn University

Presenters: Savanna Johnson, McFero Grace, Alex Gamble

Mentor(s): Dr. Overtoun Jenda

Description: Our project is centered around Renewal Energy. The objective of this project is to charge the cell phone with the help of solar power. This project acts as an instant charger. In today’s society, power demand is increased due to that power failure happens often throughout a day. Solar power generation

is one of the effective methods to generate power. In our project, we are using this method to generate power for charging the cell phone. Solar panels consist of number of silicon cells. When sunlight falls on these cells, it generates voltage pulse, which is gathered and then given to a charging circuit. The different cell phone sockets are connected in the charging circuit. In addition, we are using a battery to save the generated power and charging pad (wireless charger).

Title: *Scalable Reusable Adsorption Matrix Assemblage (S-RAMA) Device for Water Purification: An Evaluation of Layers of Celite and Wood Charcoal as Filter Media*

College/University: Auburn University at Montgomery

Authors: Kennedy Smith (Biology, AUM), Ryan Loomis (Biology, AUM), Think Q Truong (Chemistry, AUM), Brady Waller (Biology, AUM), Jasmine Walker (Biology, AUM), Daveenyah Primm (Biology, AUM), Chyna Woods (Biology, AUM), Mack Jada M (Chemistry, AUM), Shallom Kim (Biology, AUM), and Benedict Okeke (Mentor, AUM). Auburn University at Montgomery

Mentor(s): Dr. Benedict Okeke, Auburn University at Montgomery

Description: In rural communities in developing and some developed countries lack of potable water and microbial contamination of available water constitute a public health problem. Microbial contamination of available water leads to high incidence of water-borne diseases. Consequently there is need to develop affordable water purification devices that would be useful to local communities and for emergency situations in the field. We have been working on the development and construction of a scalable, reusable adsorption matrix assemblage that can be deployed for water purification in the field and in emergency situation. The prototype water filter consists of four layers of filter media in ordered array: rocks, gravel, fine sand and charcoal. The filter device is unique in that it is cost effective, reusable, scalable, easy to use and field deployable. Initial study of microbial removal capacity using Colilert revealed major reduction of microbial pollution indicator organisms from heavily polluted pond water and suggests the filter can be optimized for efficient water purification. In our current study we have explored the use of layers of wood charcoal and celite as filter media in the S-RAMA water filtration device with the goal of improving microbial pathogen removal and water clarification using a community lake water.

II. Oral Research Presentation(s)

Title: Analysis of a Community Lake for Water Quality Indicator Bacteria.

Presenter(s), Co-Author(s): Shallom Kim (Biology, AUM), Jasmine Walker (Biology, AUM), Daveenyah Primm (Biology, AUM), Brady Waller (Biology, AUM), Ryan Loomis (Biology, AUM), Kennedy Smith (Biology, AUM), Think Q Truong (Chemistry, AUM)

Subject Area(s) of Presentation: Biological Science (Microbiology/Biochemistry)

Mentor(s): Dr. Benedict Okeke, Auburn University at Montgomery

Title: Molecular Characterization and Potential Application of Macromolecule-Degrading Soil Bacteria

Presenter(s), Co-Author(s): Think Truong (Chemistry, AUM), Ryan Loomis (Biology, AUM), Chyna Woods (Biology, AUM)

Subject Area(s) of Presentation: Biological Science (Microbiology/Biochemistry)

Mentor(s): Dr. Benedict Okeke, Auburn University at Montgomery

Title: Influence of Environmental Parameters on Growth of Macromolecule-Degrading *Bacillus* species.

Presenter(s), Co-Author(s): Ryan Loomis (Biology, AUM), Chyna Woods (Biology, AUM), Brady Waller (Biology, AUM), Shallom Kim (Biology, AUM), Thinh Q Truong (Chemistry, AUM)

Subject Area(s) of Presentation: Biological Science (Microbiology/Biochemistry)

Mentor(s): Dr. Benedict Okeke, Auburn University at Montgomery

Title: Production of Microbial Electricity Using Sediment and Soil Samples

Presenter(s), Co-Author(s): Meghan Frazier (Biology, AUM), Daveenyah Primm (Biology, AUM) and Benedict Okeke (Mentor, AUM).

Subject Area(s) of Presentation: Biological Science (Microbiology/Biochemistry)

Mentor(s): Dr. Benedict Okeke, Auburn University at Montgomery

Title: Finite State Automata

Presenter(s), Co-Author(s): Andre Davis (Computer Science, AUM), Isaac Davis (Computer Science, AUM), Sydney Fields (Mathematics, AUM), Tyranie Henderson (Computer Science, AUM), Jordan Johnson (Computer Science, AUM), William LeMaster (Computer Science, AUM), Robert G. Underwood (Mentor, AUM).

Subject Area(s) of Presentation: Theoretical Computer Science

Mentor(s): Dr. Robert Underwood, Auburn University at Montgomery

Acknowledgements:

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