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MISSION:

The Diversity Hackathon is one of the key events led by the College of Architecture Diversity Council and is aligned with the mission of the Office of the Vice President and Associate Provost for Diversity:

“The Mission of the Office of the Vice President and Associate Provost for Diversity is to facilitate, coordinate, advance, amplify, inform, and monitor the University and its many units as we develop our strength in - and evidence of - respect for diversity”.

The goal of the event is to stimulate dialogue about diversity and inclusion topics on TAMU campus and beyond among students, faculty and staff in a creative, collaborative and interdisciplinary environment.
TAMU UNIVERSITY HACKATHON:

The 24-hour Diversity Hackathon was sponsored by an interdisciplinary partnership between the College of Architecture Diversity Council, College of Education and Human Development, College of Engineering, TEES, College of Geosciences, Department of Geography, TAMU Libraries, GIS & Maps, and was open to all TAMU faculty, staff, and students.

This is the third Diversity Hackathon led by the Diversity Council. The two previous ones dealt with specific concerns dealing with inclusion and diversity: the first, in 2015, focused on creative ways to visualize diversity within the A&M campus; the second, in 2016, dealt with ways to increase inclusion in our community, engaging both the City of Bryan and the City of College Station and local stakeholders. All hackathons have been held in Langford Architecture Building.

The event was a 24-hour competition on February 17-18, 2017 and was held in the College of Architecture's Langford Building in College Station, Texas. During this event, participants creatively responded to challenges presented by TAMU units, which pertained to the topic of accessibility of Texas A&M campus by addressing issues and barriers that students, faculty, and staff face on TAMU campus in everyday life. Participants competed for $5,000 in prizes.

The event challenged participants to imagine a future campus without physical, technological, digital, cultural or psychological barriers. We wanted to peek into the future through the imagination and innovation of our participants.

Steering Committee

Cecilia Giusti, COA Diversity Council, Chair
Bara Safarova, COA Diversity Council Graduate Assistant
Adam Mikeal, College of Architecture ITS
Allison LaRocca, College of Education and Human Development
Cecilia Smith, TAMU Libraries: GIS&Maps
Daniel Goldberg, TAMU GeoInnovation Service Center
Debra Dandridge, TEES and Engineering Accessibility Coordinator
Sierra Laddusaw, TAMU Libraries: GIS&Maps
Trez Jones, Department of Educational Administration and Human Resource Development

Special Thanks

Kayla Wallace, Senior Office Associate, TAMU-COA
Mitra Azimi, Graduate Assistant, COA Diversity Council
Samantha Trust, Undergraduate Assistant, COA Diversity Council
Amy Self, Graduate Assistant, COA Diversity Council
Miranda Mabery, Videography, VIZA
LIST OF PARTNERS AND COLLABORATORS:

Challengers & Mentors:

Debra Dandridge, TEES and Engineering Accessibility Coordinator
Puneet Gaddam, TAMU IT Accessibility
Daniel Goldberg, TAMU GeolInnovation Service Center
Chauma Smith Guss, TEES and Engineering
Cynthia Kauder, TAMU IT Accessibility Coordinator
Ryan Laddusaw, TAMU Libraries: GIS&Maps
Sierra Laddusaw, TAMU Libraries: GIS&Maps
Chanam Lee, Center for Health Systems & Design, Design Research Active Living Group
Chad Mandala, GLBT Center
Jaimie Hicks Masterson, Texas Target Communities
Adam Mikeal, College of Architecture ITS
J. Michael Moore, Computer Science & Engineering
Kristie Orr, TAMU Disability Services
Philip Ritchey, Computer Science & Engineering
Justin Romack, TAMU Disability Services
Cecilia Smith, TAMU Libraries: GIS&Maps
Marisa Suhm, Department of Multicultural Services at TAMU
Meagan Sumbera, Center on Disability and Development
Dan Zhang, Center on Disability and Development

JUDGES:

Daniel Goldberg, TAMU GeolInnovation Service Center
Negar Kalantar, Department of Architecture
Jaimie Hicks Masterson, Texas Target Communities
Jeremy Merrill, Department of Landscape Architecture and Urban Planning
Xuemei Zhu, Design Research Active Living Group
CHALLENGERS/SPONSORS:

1- TAMU Disability Services: Design for Access & Inclusion.
Sponsored by College of Education and Human Development: $500 award.

2- Emergency Preparedness:
Sponsored by College of Education and Human Development: $500 award.

3- TAMU GLBT Resource Center: Shifting the Culture.
Sponsored by TAMU College of Architecture Diversity Council: $500 award.

4- TAMU Libraries: Accessible Evans.
Sponsored by TAMU Libraries: GIS & Maps: $500 award.

5- TAMU Transportation Service: Accessible Transport.
Sponsored by TAMU GeoInnovation Service Center: $500 award.

6- TAMU Engineering Experiment Station: Accessible Classroom Technology. Sponsored by TAMU Engineering Experiment Station, College of Engineering: $500 award.

OTHER SPONSORS/AWARDS:

Best Interdisciplinary Collaboration:
Project which shows an innovative solution creatively employing knowledge from a variety of disciplines.
Sponsored by College of Geosciences: $500 award.

People's Choice:
People's choice winner is voted on by all participants.
Sponsored by Department of Geography: $250 award.

Most Visionary:
Project which will imagine audacious, highly speculative, even impractical ideas or schemes for the future of TAMU campus without barriers.
Sponsored by Department of Geography: $250 award.

Eye Candy:
Best-looking submission.
Sponsored by College of Architecture: $250 award.

Most Practical:
Project which will show most promise for implementation. A low-budget solution to deliver a high-impact change, erasing or overcoming accessibility barriers on TAMU campus. Sponsored by TAMU Engineering Experiment Station, College of Engineering: $250 award.

Most Impact:
Project with the most impact for the least monetary investment.
Sponsored by TAMU Engineering Experiment Station, College of Engineering: $250 award.

Surprise prize TBD on the day:
This award is reserved for the judges to determine on the day of the event - after the Show & Tell presentations.
Sponsored by College of Architecture: $250 award.
<table>
<thead>
<tr>
<th>LIST OF PARTICIPANTS:</th>
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<tbody>
<tr>
<td>Out of all Hackathon participants, this list represents those who presented their projects</td>
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<table>
<thead>
<tr>
<th>IN-DIRECT</th>
<th>FRIENDLY BUS STATION</th>
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<tbody>
<tr>
<td>Karunamidhi Devanidhi</td>
<td>Mitra Azimi</td>
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<tr>
<th>AUDIO TEXTURE WAY FIND</th>
<th>MOVE IT!</th>
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<tr>
<td>Jeffrey Cordero</td>
<td>Barrett Ochoa</td>
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<td>Michael Peterson</td>
<td>Sam Hudson</td>
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<td>Tyler Carlson</td>
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<td>Nathan Garcia</td>
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<td>Jeremy Harrienger</td>
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<td>Reese Godwin</td>
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<td>Kennedy Carr</td>
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<thead>
<tr>
<th>BUS FOR ALL</th>
<th>(UN)WALK THE STRAIGHT PATH</th>
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<tbody>
<tr>
<td>Dario Sanchez</td>
<td>Pranjal Dixit</td>
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<td>Gerardo Vazquez</td>
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<thead>
<tr>
<th>LINGUAL</th>
<th>FIRE EXIT ACCESS DESIGN (NATURALLY FLAVORED)</th>
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<tbody>
<tr>
<td>Vaibhav Mittal</td>
<td>Mehdi Azizkhani</td>
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<tr>
<td>Rajat Yadav</td>
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<td>Rahul Jain</td>
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<thead>
<tr>
<th>TAMU BUS ROUTE ALERT</th>
<th>TAMU CONNECT</th>
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<tbody>
<tr>
<td>Kaleb Lewis</td>
<td>Veera Chokalingam</td>
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<tr>
<td>Marissa Lara</td>
<td>Aniket Bonde</td>
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<tr>
<th>TAMU ACA</th>
<th>FOYER OF 4 SENSES</th>
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<tbody>
<tr>
<td>Euntaek Yoon</td>
<td>Rohit Kumar</td>
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<td>John Timberlake</td>
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<td>Natalie Somerville</td>
<td></td>
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<td>Antoni Kwiatkowski</td>
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<thead>
<tr>
<th>EMERGENCY PREPAREDNESS FOR THE DISABLED</th>
<th>UMBRELLA</th>
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<tbody>
<tr>
<td>Neal Wendele</td>
<td>Amy Self</td>
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<tr>
<td>Kartikeya Jha</td>
<td>tlyons</td>
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<thead>
<tr>
<th>TAMU ALL-ACCESS</th>
<th>IT’S (LIT)ERATURE</th>
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<tbody>
<tr>
<td>Cody Culp</td>
<td>Zachary Dunn</td>
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<tr>
<td>Shi Shu</td>
<td>Tung Nguyen</td>
</tr>
<tr>
<td>Hannah Kowpak</td>
<td>Shibiya S Sabu</td>
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<tr>
<th>EVANS LIBRARY GATE REDESIGN FOR EMERGENCY EVACUATION</th>
<th>ARE YOU QUEERIOUS?</th>
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<tbody>
<tr>
<td>Harsha Kestur Narayanawamy</td>
<td>Gulafshan Ghori</td>
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<tr>
<td>Chin-Cheng (Jim) Shih</td>
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<tr>
<th>REAL SCHEDULE</th>
<th>GAZE GESTURE</th>
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<tbody>
<tr>
<td>Dingli Hu</td>
<td>Vijay Rajanna</td>
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<td>Wei Zhao</td>
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Inspiration:

We wanted to make students universally equipped for every classroom. We wanted to draft a product that was not only user-friendly, but also provided a foundation to build upon for future accessible technology projects.

What it does:

TAMU All-Access was an app built with accessibility in mind. We wanted to incorporate accessibility options for different physical challenges posed by disabilities. The app will also lay a solid groundwork for future endeavors within TEES and College of Engineering technological.

How we built it:

We ran a prototype emulator, that runs the Swift App software, which allows us to completely program an application for iOS devices. We had to think outside the box, using proto.io to host an iOS app for us.

Challenges we ran into:

Getting photo to actually run like a prototype is a feat of its own. Accommodating for others while also being realistic was difficult to get over: changes and growth in scope without regard to resources including time was a challenge while completing a product on time.

Accomplishments that we are proud of:

We are proud that such a multi-disciplinary team was able to accomplish such a technical software project and could let all of our backgrounds influence the final product.

What We Learned:

We learned that working together, regardless of discipline, is the key to finding success in any project.

What’s next:

Streamline the app’s processes and UI. Optimization must be what is next for TAMU All-Access.
EMERGENCY PREPAREDNESS FOR THE DISABLED

Inspiration:

Our team was inspired by the challenge presented by the Center on Disability and Development to support and assist those with disabilities throughout the notification, evacuation, and sheltering during an emergency on campus. Current policy in many campus buildings does not adequately address evacuating people with physical disabilities during and emergency.

What it does:

We propose promoting this app to people who may need assistance, and ensuring first responders get that information. This insures disabled persons get the help they need even if they are alone when an emergency occurs. UPD and Building Supervisors will receive the information and can coordinate the most appropriate response within existing guidelines.

How we built it:

The AssitMe app can be promoted via e-mail blasts, signage, and during new student conferences. Disability Services personnel can be educated to promote the app when people sign up for accommodation services. Future accommodations could include a standalone app tailored specifically to disabled Aggies with GIS mapping of emergency shelters on campus.

Challenges we ran into:

Facility supervisors can be tasked with providing shelter information for their buildings to GIS Services.

What's next:

Electronic availability of this data is needed for future advancements. We also must insure UPD can receive text information, and disseminate GPS coordinates to first responders.
Inspiration:

Texas A&M is built on tradition. Over the years, Texas A&M has been able to build on the idea of inclusion, whether it was people of different races, genders, backgrounds, or nationalities. A&M has come, since its foundation, to include women, and those not actively involved in the military. Each step of inclusion is an opportunity to share the traditions and values.

What it does:

When putting together the new and revamped GLBT Center website, we kept in mind the layout of the TAMU main site pages. Our design goals were to take the information and maintain the site’s accessibility while making it more navigable and more pleasing to the eye. A more inviting GLBT Center website, with more visibility and links on the main TAMU site, will do more than a poster campaign to let students know about the resources and community available to them.

How we built it:

By increasing accessibility to resources, other members, and allied faculty, Aggies can more easily see the place that Texas A&M can offer - and already has - for them on campus. Also, we felt that an all-encompassing umbrella logo would be nice as the GLBT Center Logo.
Inspiration:
Public space should be available to everyone. What the library enables makes us human. We eat, drink, sleep, read, write, talk, create, collaborate, and so much more at a central place in campus. This should be celebrated both symbolically and visually for the whole campus to see and use.

What it does:
Our project makes proposals small and large. We want to make the campus better for EVERYONE. Good design is accessible for all and improves the space around it. We use Evans Library as a case study on how we can improve the campus for all and improve public space as well as help make these spaces healthier and happier.

How we built it:
We built it using tools architects love in the beginning of the creative process. This project was built heavily on collaboration, fluid use of Sketchup, Illustrator, Photoshop, and AutoCAD.

Challenges we ran into:
The limit of two people, and, of course, technical issues here and there. Yet, we persevered!

Accomplishments that we're proud of:
We're very happy with our production of ideas and visualizations for the limited amount of time and software we had.

What we learned:
Charettes are really not too different from hackathons. You can produce amazing ideas and designs in a short time and really amplify your craft. A win-win for everybody.

What's next:
Taking over the world. obvi.
MOVE IT!
The Floating Bus Stop

Inspiration:

We took inspiration from Santa Barbara University and the transportation speech in the beginning of this event.

What it does:

Increases accessibly by separating bikes from people, people from buses, and everyone from cars.

How we built it:

We used a wide range of computing systems to build maps, 3D models, and images.

Challenges we ran into:

Time was a major factor in the quality of our work. We always want our work to be presentable, and clearly displaying our ideas was extremely difficult in this short amount of time.

Accomplishments that we are proud of:

Fluid campus highway system for bicycles and easy access to the library.

What We Learned:

There are more issues facing the people of this university, disabled or not, and there are always ways to improve the life of everyone involved.

What's next:

Expand upon initial implementation by completing full build-out on campus and then expanding to the Bryan/College Station region.
Traditional Bus Stop

New Bus Stop

Bicycle Highway
(Proposed Main Campus Bicycle Network)

Ramp: The Final Steps

Provides dedicated facilities for bicyclists
**LINGUAL:**
Real time speech to multiple language text

**Inspiration:**

People with hearing disabilities have problems with understanding in classrooms. Moreover, everyone has a different accent, which makes it difficult for the students to understand, and many professors feel more comfortable giving lectures in their native language. Our application is a step towards helping those with hearing disabilities and making the classrooms more accessible for them with the help of technology.

**What it does:**

Our application translates the lecture in the classroom or meeting room into many different languages in real time and takes the input from the system’s microphone, converting the audio to text. The system then streams the text to individual users in the language of their choice.

**How we built it:**

The application has been developed in Java using Javascript for front-end and MySQL as database. Spring MVC has been used for client-server communication. For speech to text conversion, 'web-speech-api' has been used. For interlanguage text conversion, 'google translate api' was used.

**Challenges we ran into:**

The main challenge was to work with the live streaming. The http connections through which the students will receive live data has to be open until explicitly closed. Another challenge was to break the speech into chunks for text conversion.

**Accomplishments that we're proud of:**

It breaks the language barrier in learning and will make the world a better place with easy and efficient knowledge sharing.

**What we learned:**

We learned about the challenges faced by the differently abled people in their day to day life, and how important is to make all the facilities available to them so that they can interact with people like they want to.

**What's next:**

- Lingual can be integrated into online lectures.
- Lingual can be used to create subtitles for the video on the go.
- Lingual can be used for one-on-one conversation with people with hearing
Inspiration:

They say fish camp is a freshman’s first tradition, well then the second one must be being lost! A&M’s architecture and layout doesn’t lend itself to being easily navigated. Finding your way to class and around campus is a challenge on its own, adding a visual impairment doesn’t help. Often, the visually impaired must plan their routes the day before to find a new place or rely on underdeveloped projects.

What it does:

The goal was to make A&M more friendly for everyone to navigate. The solution is to construct a mixed tech and physical framework to assist users to more easily navigate new and changing spaces around campus is the solution.

What we learned:

The difficulties in accommodating the provisions were usually taken for granted.

What’s next:

- Navigation to exist in emergency situations
- Include building across Texas A&M
- Add to a database of objects, obstacles, and paths
- Increased location tracking
- Can be used in the workplace to give employers more incentive to hire

Texture Patterns

![Texture Patterns](image-url)
Third Floor Textured Pathway Layout

First Floor Textured Pathway Layout

Third Floor Textured Pathways Example

First Floor Textured Pathways Example

Exterior Textured Pathways Example

Adding Ramps to the Front Entrance

Hackathon 19
Inspiration:

I was most moved by the things that differently challenged people have to go through on campus.

What it does:

I measured and weighed the current ADA standards and found them wanting. To ensure a more inclusive campus, I am proposing a new set of regulations, directives, and statutes for buildings across campus, and possibly nationwide, to incorporate into their design. I would like to introduce the Aggie Code of Accessibility, ACA, which will produce a campus that addresses all forms of disabilities and provides accommodations for each.

How I built it:

Today I have taken these standards and implemented them into the designs of both the Disability Services Building and the Entrance to Sterling Evans Library. ACA codes will not only focus on accessibility across campus, but also on mental health, quality of life, and students’ physical well-being by providing healing spaces.

Challenges I ran into:

A challenge for me was deciding what ideas would be the most influential to incorporate into my presentation.

Accomplishments that I am proud of:

Working successfully and producing quality work while having a great time.

What I learned:

I learned about the difficulties of those with disabilities and how to better understand and accommodate for their challenges.

What's next:

To become an official accessibility standard nationwide.
GAZE GESTURE-Based Interactions for Accessible HCI

Inspiration:

Users with physical impairments are limited by their ability to work on computers using the conventional mouse- and keyboard-based interactions. Existing accessible technologies still have usability issues, need a lot of training, and are imprecise.

What it does:

I present a gaze gesture-based interaction paradigm for users with physical impairments to work on a computer by just using their eye movements. I use an eye tracker that tracks the user’s eye movements. Users with speech impairment can also use this system to speak quick phrases by performing gestures.

How I built it:

The application is built in C# and uses gesture recognition algorithms to match a user’s gaze-path with the template path to recognize the command.

Challenges I ran into:

Gesture recognition is hard with gaze points. This is because our eyes move very fast and the system generates only a few points when a gesture is performed by the user. Also, adding audio responses for gestures was hard as I was running into a lot of wrong recognitions.

Accomplishments that I’m proud of:

Ability to recognize gaze gestures, and map the gesture back to a command or a spoken response.

What We Learned:

It was quite fun to work for long hours and not feel tired. I enjoyed the experience of developing a prototype in 24 hours, creating a video demo and a presentation.

What’s next:

I wish to integrate more gestures into the system and improve the feedback. Currently, the only feedback is the movement of the cursor on the screen which is hard to see. While performing the gesture, the cursor should change to a different visual object and make the gesture quite apparent.
Lessons Learned

The Hackathon format allows students to creatively work on issues directly related to diversity and inclusion. While it seems to be mostly for computer skilled participants, in reality it engages students from more than five colleges, including Education, Liberal Arts, the Bush School, and Architecture. Students are set to work within interdisciplinary teams that allow them to discuss their ideas in a more open and productive way.

All participants expressed their positive experience and they end the 24-hour event with a more complex understanding of what diversity and inclusion entail. This is one more educational tool to advance knowledge and engagement for our students aiming a more inclusive and diverse society.
TAMU Sponsoring Units:

- Architecture, Texas A&M University
- Engineering, Texas A&M University
- Texas A&M Experiment Station
- Education & Human Development, Texas A&M University
- Multicultural Services, Texas A&M University
- Texas A&M University Libraries
- GeoInnovation Service Center
- Department of Geography, College of Geosciences
- The College of Geosciences
- Disability Services, Division of Student Affairs
- Texas A&M University
- Center on Disability & Development
- Architecture, Texas A&M University
- IT Accessibility
- Samuel Guss Photography