



Connecting Students with Communities: Telepresence Amusement Parks

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Community STEAM Collaborative
coSTEAMco.org

2026 Palmetto Education Summit
[Google Slides Presentation Here](#)





Outline

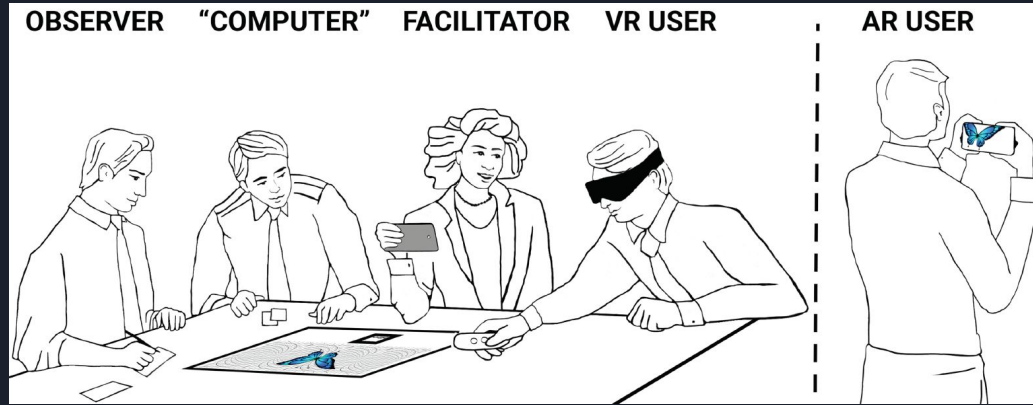
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Motivation

- PLTW STEM Teacher
- IED: Introduction to Engineering Design
- POE: Principles of Engineering
- AE: Aerospace Engineering
- CAP: Capstone
- Projects that are relevant with a story
- Engaging & Immersive
- Low Cost & Available
- Multidimensional - Spans many domains
- Supports Community Outreach - Like Band, Theater, and Sports

Inspiration from AR/VR/XR Class in Coursera



360-degree paper prototyping involves participants in different roles: User tests an AR/VR paper mockup of an animated butterfly scene; Facilitator streams the butterfly cut-out arranged on a 360° paper template, while “Computer” moves the butterfly along the 360° grid; Observer records User’s behavior and feedback.

Michael Nebeling, Katy Madier. 2019. 360proto: Making Interactive Virtual Reality & Augmented Reality Prototypes from Paper.

<https://doi.org/10.1145/3290605.3300826>

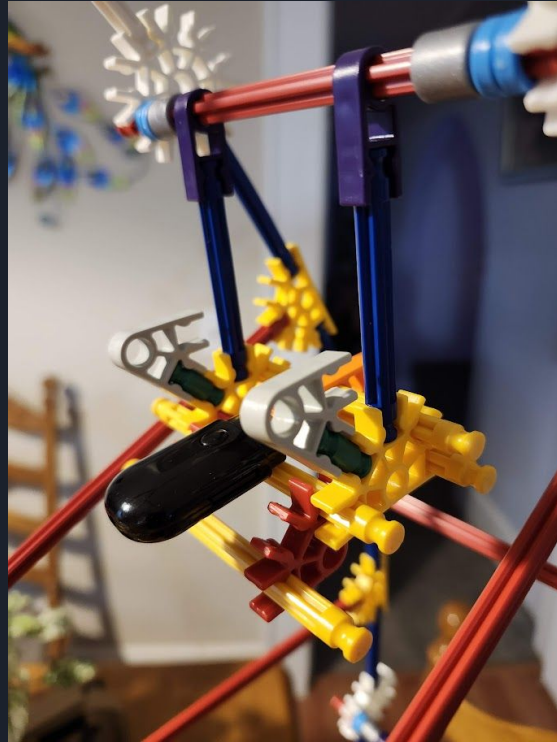
Background of the Amusement Park Ride Project

2011 Keenan



2014 CATS

Advancements in Technology: FPV Drone Cameras



Recreating the Concept with Modern Mat'ls

Building the Ferris Wheel



Creating Other Rides: Boom Ride and Swing Ride



Swing Ride Video





Merit as Part of a Subject as a STEAM Activity

- Amusement Park foster positive reactions from most
- Amusement Park Rides are Mechanical and Electrical incorporating Mechanical and Electrical Engineering naturally
- Students Modify an Existing Kit by adding a camera, adjusting speed and providing surroundings requires understanding
- Speed Control is needed for a convincing experience
- Community Outreach: Design for an audience and engage
- Business and Hospitality aspects include sales, marketing, digital arts, digital media, culinary, and logistics



Merit as Part of a Student Competition

- Different From Other STEM competitions such as Robotics, Flight Endurance, Technical Problem Solving
- Students modify an existing kit by adding a camera, adjusting speed and providing surroundings
- Human Element must be understood to be able to make a convincing experience
- Observers can participate and be part of the competition
- School Participation
- Community Outreach: Retirement Communities, Special Needs classes, Children's Hospitals, etc.
- Business and Hospitality aspects such as team fundraising and raising money for a cause.



Elementary, Middle, High School, and University

Elementary School

- Construct from existing kits for a classroom experience with outreach to other classes in the school - SCASA Teacher Recommendation

Middle School

- Construct from existing kits
- Community Outreach

High School

- Existing Kits and a Custom design
- Community Outreach w/travel
- Document Custom Design

University

- Large Scale model rides
- AR/VR Application
- Community Outreach as part of school recruitment

Hardware, Costs, and Accessibility (Amazon)

Item #	Description	Cost
1	Universal AstroCam HD Rocket Camera and Holder	\$49.99
2	HHZ 2 pcs 7.4V 300mAh 20C Lipo Battery for WLtoys F959 Sky-King RC Airplane Spare Parts	\$25.99
3	RunCam Spotter V2 FPV Camera and Transmitter Kit, 5.8G Micro FPV AIO Cam, OSD, Integrated Mic, FOV170 Degree 700TVL, 40CH, 20MW-200MW Adjustable for FPV	\$49.99
4	Google Cardboard, Topmaxions 3D VR Virtual Reality DIY VR Headset for 3D Movies and Games Compatible with Android & Apple Up to 6 Inch Easy Setup Machine	\$9.45
5	WR832 5.8GHz 40CH Wireless FPV Audio Video Receiver for Racing Drone and Multicopter	\$39.99

6	XMSJSIY RCA AV to USB C Converter Video Capture Card Adapter 1 Channel AV NTSC PAL Video S Video/Composite to USB Converter Video Audio RCA for Mobile Phone/PC	\$16.50
7	5.8G FPV Goggles with Antennas: 3 Inch Screen 5.8G 40CH Build in Battery Video Headset for Analog FPV camera and Transmitter FPV Drone RC Car Airplane RC Hobbies by Speedybee	\$69.99
8	Skyzone Cobra X V4 5.8GHz FPV Goggles w/ SteadyView Receiver	\$269.99
9	K*NEX Education STEM Explorations: 3-in-1 Classic Amusement Park Building Set – Multicolor & Motorized, Creative-Learning Construction Mode	\$44.90
10	LiPo Battery Charger 2S-3S RC Balance Charger AC 7.4-11.1V 10W Upgrade Version B3AC Pro Compact Charger RC Car Charger for XHR Plug Battery(B3V2)	\$15.99



Piloting at USC



MONDAY - MODULES I & II	
9:00-11:15 AM	1:00-3:15 PM
INTRODUCTIONS TO THE PROJECT W/DEMO ENGINEERING DESIGN PROCESS REVIEW RESOURCES LEARNING ABOUT CAMPER SKILLS BUILD TEAMS	ESTABLISH WHICH TEAM BUILDS WHICH MODEL INTRODUCTION TO ELECTRICITY BUILD RIDE SPEED CONTROLLERS BUILD THE RIDE PLATFORM
TUESDAY - MODULES III & IV	
BACKGROUND ON CONVINCING RIDES BRAINSTORM THE FENCE CONCEPT START THE RIDE BUILD PROCESS	FINISH THE RIDE BUILD PROCESS START THE FENCE-BUILDING PROCESS

Piloting at USC



WEDNESDAY - MODULES V & VI

INCORPORATION OF CAMERAS ON THE RIDE
PHYSICS/ENGINEERING CONCERNS
INCORPORATE USC LOGOS AND COLLEGES

RESEARCHING FAIR SOUNDS ONLINE
FINISH THE FENCE BUILD
START MAKING RIDE CHARACTERS OUT OF
PLAYDOUGH TO INCORPORATE

THURSDAY - MODULES VII & VIII

FINISH THE AMUSEMENT PARK
RIDE EACH TEAM'S RIDE
PHOTOGRAPHS

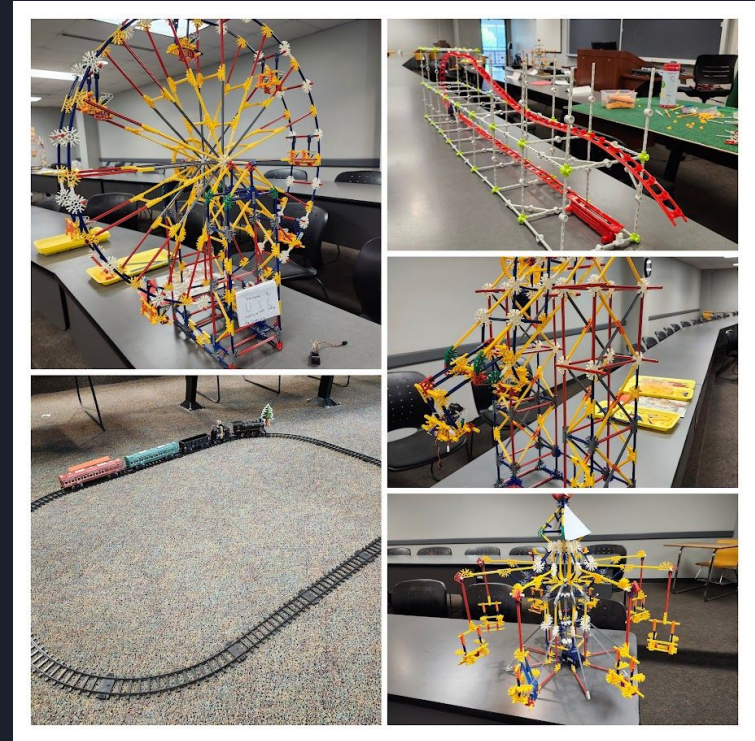
CREATE VIDEOS FROM EACH RIDE
VIDEOS AND PICTURES SHARED/POSTED
GUEST RIDERS

FRIDAY - MODULE IX

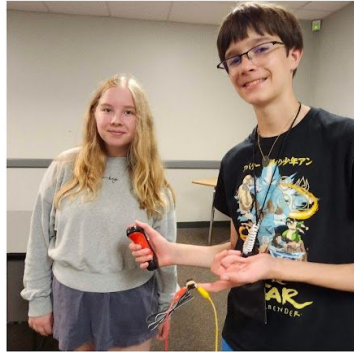
BREAK DOWN RIDE KITS

FINAL SCHOLARS' PRESENTATIONS (PHOTOS/VIDEOS)

Monday



Tuesday



Wednesday



Thursday





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Piloting in IED

- Working with residents at Heritage retirement community at Lowman
- Connected to Ringling College of Art and Design
- Three Meeting: Initial Design, Update, and Final Presentation
- Presented at the SC State Fair
- Winter Wonderland fundraiser

Preparation for Initial Meeting

Talk from Melanie Westhart, Spring Hill High School Social Worker. We learned about our audience,

- Hearing
- Mobility Issues
- Ageism
- Dietary needs
- Possible problems with video headsets



OCTOBER 15TH / WEDNESDAY

JOIN US FOR LOTS OF FUN

THE HERITAGE AMUSEMENT PARK PROJECT

Step into the magic of the Heritage Fair — where every ride rewinds time, every laugh echoes tradition, and memories are made to last forever!

WE PRESENT TO YOU

- Ferris Wheel "Seasons of Life"
- Boom Ride "The Heritage Tower"
- Swing Ride "Dances in the Garden"
- Train Ride "The Memory Lane Express"
- Roller Coaster "The Rush of Youth"
- Shark Ride "Treasure Hunt Adventure"

TEAMS

Engineering: Jalen Bowman, Noah Collins, Ayden Jester, Isaiah Jones, Zachary Kay, Braylon Raines, Mylia Robinson, Delilah Simmons, Max Verburg

Digital Art & Design: Hailey Johns, Madelyn McCartney, Jada White

Culinary: Coryn Speights

SPONSORS AND SUPPORTERS

Molinaroli College of Engineering and Computing
UNIVERSITY OF SOUTH CAROLINA

PEARL

Ringling College of Art + Design

THE CENTER for Advanced Technical Studies

Mid-Carolina ELECTRIC COOPERATIVE

the Heritage at Lowman

Initial Meeting at The Heritage



Public Speaking Tip: Present with the students and let them know you have their back.

Connecting with...

Jamie DeRuyter

- Department Head of Entertainment Design at Ringling College of Art + Design

About Story

- People are “wired” for Story
- Overall Story which is the Theme
- Rides Connect to the Theme with their own stories



AI & Story Creation

AI Large Language Models

- Prompt engineering
- Refinement
- Validation

Used to develop story lines

Used Magic School AI Raina
Every student produced stories
Stories were selected using a survey.



Overall Story

Welcome to The Heritage Fair

Step into a magical world where memories come alive! The Heritage Fair celebrates the rich stories, traditions, and experiences that make our community special. Here, every ride takes you on a journey through time, every attraction honors the wisdom of generations, and every moment creates new memories to treasure.

Ferris Wheel



Seasons of Life

Your journey on the wheel takes you through the four seasons of a lifetime - the spring of youth, summer of adventure, autumn of wisdom, and winter of reflection. Each rotation shows the beauty in every stage.

**Zac
Up Next Braylon**

Following Images:
<https://www.fabbrigroup.com/>

Boom Ride

The Heritage Tower

Climb aboard the Heritage Tower, where you'll soar high above your hometown to see how it's grown and changed over the decades! As you rise up and gently bounce, you're getting a bird's eye view of all the memories and milestones that built your community into the special place it is today.



Swing Ride



Dances in the Garden

Inspired by stories of springtime dances and picnics beneath blooming trees, Dances in the Garden lets riders sway and spin through the air like flower petals on a breeze. It honors the simple joys—laughter, music, and the warmth of loved ones.

Train Ride

The Memory Lane Express

All aboard the Memory Lane Express - a magical train that whooshes you through the best moments of the past 70 years! You'll zoom past classic diners, dance halls, and family celebrations before arriving back at Heritage Station where all our precious memories come together.

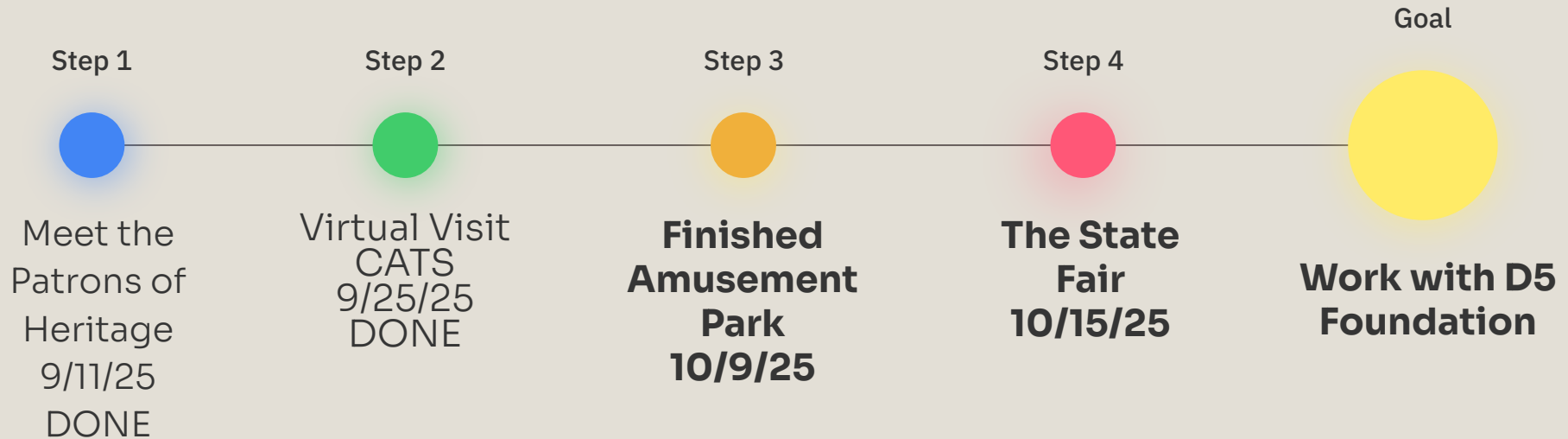
A roller coaster with orange tracks and grey rock-like structures. The coaster is set against a clear blue sky. The tracks are supported by orange pillars. The rock structures are large and grey, resembling natural rock formations. The coaster cars are visible on the tracks, and the overall scene is bright and sunny.

Roller Coaster

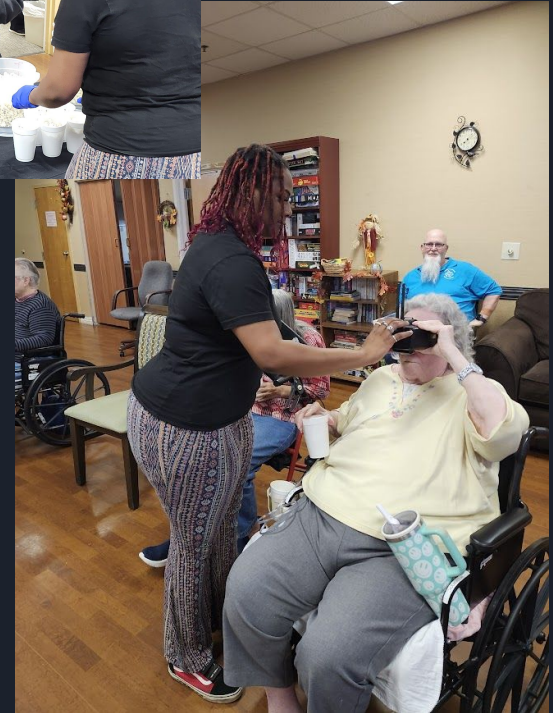
The Rush of Youth

A thrilling roller coaster filled with twists and turns, celebrating the bold spirit of adventure. It echoes the energy of younger days—bike races, daring leaps, and stories that start with “Remember when we...?” It reminds us that every life has had its wild rides!

Virtual Status Update



Final Presentation



Final Presentation Cont.



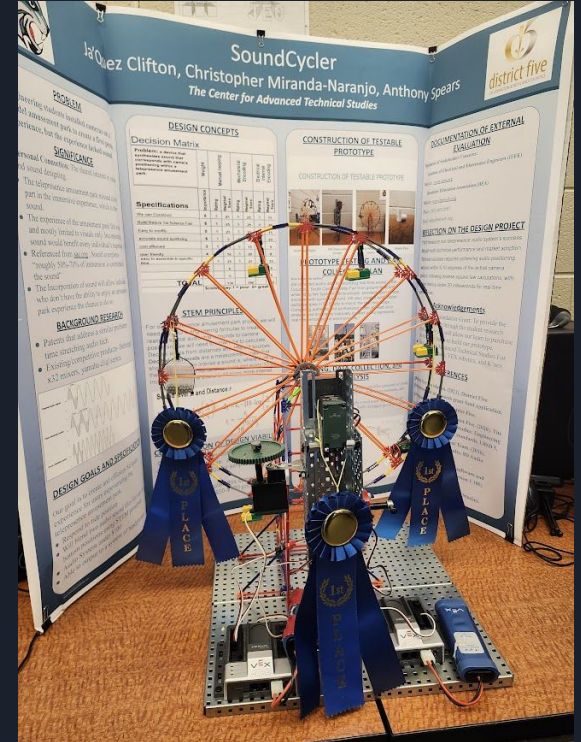
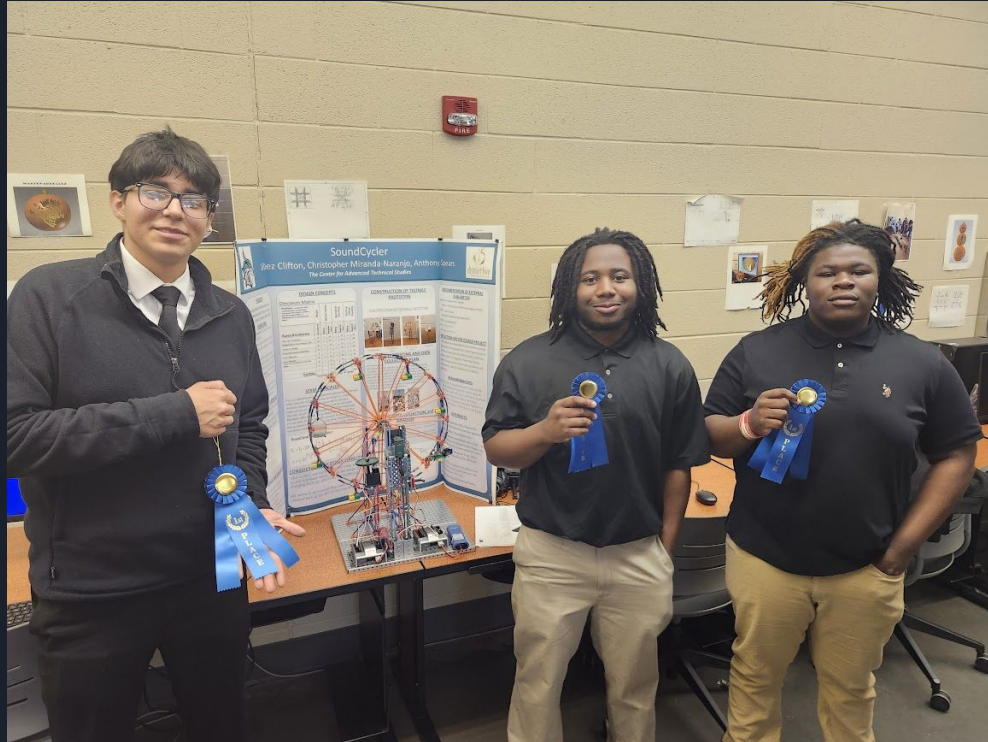
SC State Fair



CATS Holiday Festival - Part of SkillsUSA



CAPSTONE Class - 1st Place Eng'g @ D5 Science Fair



Future - Community STEAM Collaborative

- Web Presence - coSTEAMco.org
- Instructional Information & Best Practices
- Resources & Product Reviews
- Competition Rules
- Competition Sign Up Mechanism
- Sponsors
- Funding Opportunities

Email: martin@costeamco.org





Summary

- A third person toy is converted into a first person experience making it a natural for outreach with the community
- Technology and Kits used are cost effective and available
- Themed Entertainment Amusement Park Design intersects multiple domains
- Unlike traditional STEM activities, which focus primarily on technical performance, this initiative emphasizes community engagement, fostering a direct connection between students and their local communities
- Business and the Hospitality industry naturally incorporates into the competition



Acknowledgements and Questions

- Peggy Cwiakala, my wife who has supported this venture
- Patrick Cwiakala, provided drone expertise and video creation
- IED, POE, and CAP Students
- University of South Carolina - Krystal DuBose
- Ringling College of Art + Design - Jamie DeRuyter
- LexRich 5 - Mr. Frick (CATS Assistant Director), Melanie Westhart (Spring Hill High School Social Worker)
- The Heritage at Lowman - Residents, Tara Nimmons, and Amanda Knowles
- SC State Fair - Nancy Smith and Nancy Kesar
- Mid-Carolina Electric Cooperative - Bright Ideas Grant

RIDE VIDEOS: tinyurl.com/MyWWL2025 (Youtube)

PAPER: tinyurl.com/XRPaper

(16th International Multi-Conference on Complexity, Informatics and Cybernetics: IMCIC 2025)

INTEREST SURVEY: tinyurl.com/coSTEAMco (provide your email)

Suggested Starter Kit

Get Started with:

- (1) 7.4V Lipo Battery Charger - RC Car Balance Chargers USB Cable 2-in-1
- (1) RCA AV to USB C Converter
- (2) 7.4V 300mAh 2S LiPo Battery
- (1) RunCam Spotter V2 FPV Camera and Transmitter Kit
- (1) 5.8G FPV Goggles with Antennas - Low Cost
Or
(1) EV800D FPV Goggles with DVR - 5.8G 40CH 5 Inch Screen - Better for Outreach
- K'NEX - 3-in-1 Classic Amusement Park Building Set

[Quick Starts Parts List on Amazon](#)



**INTEREST SURVEY - PLEASE
TAKE tinyurl.com/coSTEAMco
or use QR code**

[Quick Start Videos on next slides](#)

Telepresence Amusement Park Kit Quick Start Guide Part-1



Telepresence Amusement Park Kit Quick Start Guide Part-2

