2023 Fort Worth Regional Science and Engineering Fair

American Meteorological Society Award

1st Place: Comprehensive Dataset Utilizing Meteorological and Topographical Feature Data for Next-Day Wildfire Spread Prediction

Project ID: 200941

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Earth & Planetary Sciences

Students: Anish Goel, Aditya Singirikonda

2nd Place: Tame the Flame: Assessing the Flammability of Construction Materials and Developing a Fireproof Coating To Reduce The Damage of Homes From Wildfires
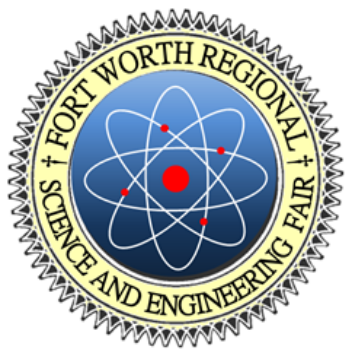
Project ID: 196271

School: Colleyville Heritage High School

Division: Senior

Category: Earth & Planetary Sciences

Students: Kaitlyn McKillop

2023 Fort Worth Regional Science and Engineering Fair

American Psychological Association

1st Place: Psychopathy, Intellectual Humility, and Social Media: A Strategy to Prevent School Shootings?

Project ID: 199625

School: Martin STEM School

Division: Senior

Category: Behavioral & Social Sciences

Students: Maya Shah

2nd Place: Early Diagnosis of Post-Traumatic Stress Disorder in Nurses Based on Physical Behavior and Circadian Rhythm Modeled by a Recurrent Neural Network

Project ID: 201116

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Behavioral & Social Sciences

Students: Ria Garg

3rd Place: Let's Take a Trip to the Mountains!: A Holistic Review of Using Nature as an External Stimuli on Diaphragmatic-Guided Meditation
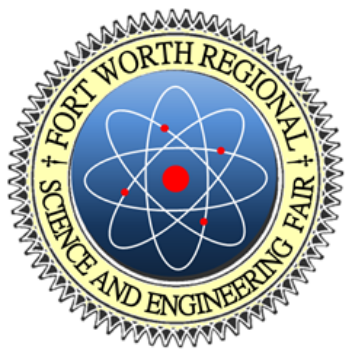
Project ID: 191328

School: Colleyville Heritage High School

Division: Senior

Category: Behavioral & Social Sciences

Students: Gregory Huynh

2023 Fort Worth Regional Science and Engineering Fair

American Psychological Association

1st Alt: The analysis of attitudes, knowledge regarding mental illness, and relationships to personality

Project ID: 200900

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Behavioral & Social Sciences

Students: Sruthi Bharath Kumar

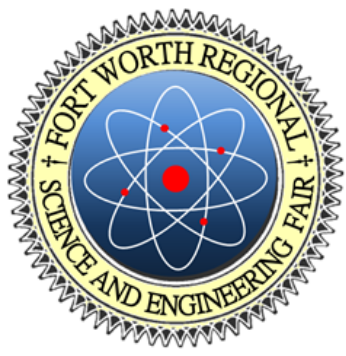**2nd Alt:** Hug it Out: A Randomized Trial of DPT on Participants for Anxiety and Depression Alleviation

Project ID: 194549

School: Colleyville Heritage High School

Division: Senior

Category: Behavioral & Social Sciences

Students: Nicole Namy

2023 Fort Worth Regional Science and Engineering Fair

American Society for Quality, Greater Fort Worth Section 1416

1st Place: Analysis and Prediction of Energy Usage for a State-based Appliance: Washing Machine Case Study

Project ID: 202874

School: The Oakridge School

Division: Senior

Category: Environmental Management & Sciences

Students: Eshan Singhal

2nd Place: Implementing a Novel Machine Learning Model for the Detection of Compact Binary Coalescence

Project ID: 191333

School: Colleyville Heritage High School

Division: Senior

Category: Physics & Astronomy

Students: Macsen Casaus

3rd Place: ENStaDTI: Predicting Drug-Target Interaction Using Ensemble of Node Embedding and Stacking Ensemble Machine Learning Classifier for Drug Repurposing
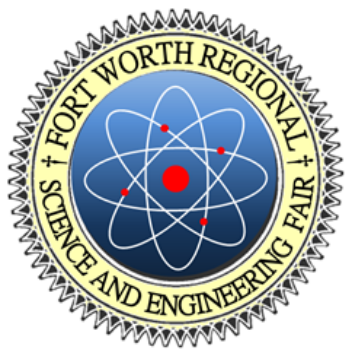
Project ID: 204031

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Computer Science

Students: Shreya Amalapurapu

2023 Fort Worth Regional Science and Engineering Fair

Charlie Mary Noble Award in Astronomy

1st Place: The Nature of Multiphase Filaments in the Centers of Galaxy Clusters

Project ID: 200975

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Physics & Astronomy

Students: Sampadaa Prakash

2nd Place: Implementing a Novel Machine Learning Model for the Detection of Compact Binary Coalescence
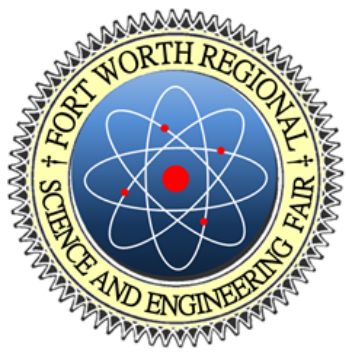
Project ID: 191333

School: Colleyville Heritage High School

Division: Senior

Category: Physics & Astronomy

Students: Macsen Casaus

2023 Fort Worth Regional Science and Engineering Fair

Ellen and Delbert E. Lawry Award

1st Place: IVY: An Intelligent Vision System for the Visually Impaired

Project ID: 201121

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Sarang Goel

2nd Place: Using Regional Resources to Engineer an Effective Edible Coating for Mangos

Project ID: 194974

School: Colleyville Heritage High School

Division: Senior

Category: Plant Sciences

Students: Grayson Champlin

3rd Place: Analyzing the Synergistic Effect of Acid/Alkaline Pretreatment with Hydrothermal Pretreatment on the Production of Biofuel from Lignocellulosic Biomass
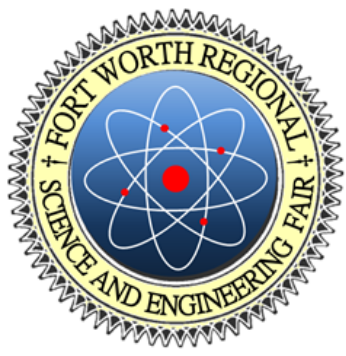
Project ID: 198291

School: Colleyville Heritage High School

Division: Senior

Category: Energy & Transportation

Students: Sritanvi Donepudi, Shiwani Vivek

2023 Fort Worth Regional Science and Engineering Fair

Ellen and Delbert E. Lawry Award

1st Alt: Investigating the Gut-Brain-Microbiota Axis: The Effect of Prebiotics and Probiotics on Appetite in Drosophila Melanogaster

Project ID: 196274

School: Colleyville Heritage High School

Division: Senior

Category: Microbiology

Students: Benjamin Ding

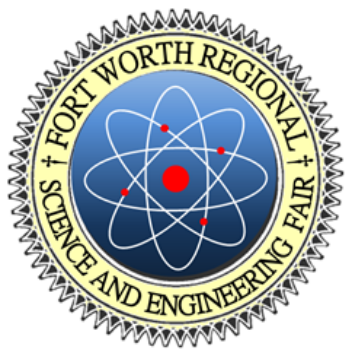**2nd Alt:** The Typing Test: An Analysis of the Potential Applications of Piezoelectricity

Project ID: 207013

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Isabella Ahuactzin, Elizabeth Hoskins

2023 Fort Worth Regional Science and Engineering Fair

Fort Worth Audubon Society Conservation Award

1st Place: Comprehensive Dataset Utilizing Meteorological and Topographical Feature Data for Next-Day Wildfire Spread Prediction

Project ID: 200941

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Earth & Planetary Sciences

Students: Anish Goel, Aditya Singirikonda

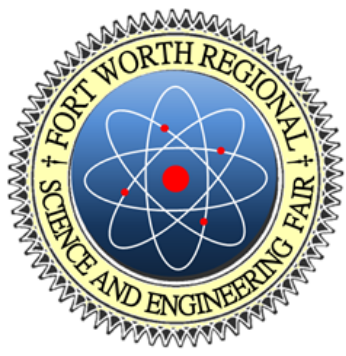**2nd Place:** Enhancing the Efficiency and Sustainability of Green Roof Gardening Systems

Project ID: 191545

School: Colleyville Heritage High School

Division: Senior

Category: Environmental Management & Sciences

Students: Lily Heilhecker

2023 Fort Worth Regional Science and Engineering Fair

IEEE - Fort Worth Section

1st Place: IVY: An Intelligent Vision System for the Visually Impaired

Project ID: 201121

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Sarang Goel

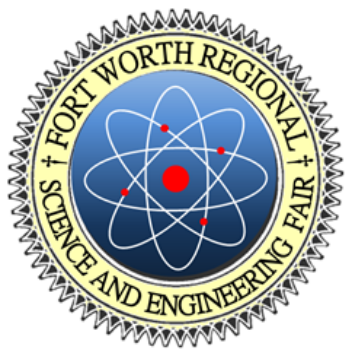**2nd Place:** The Typing Test: An Analysis of the Potential Applications of Piezoelectricity

Project ID: 207013

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Isabella Ahuactzin, Elizabeth Hoskins

2023 Fort Worth Regional Science and Engineering Fair

Lockheed Martin Aeronautics Company

1st Place: Reactive Astrocytes and their Cilia Signaling in Alzheimer's Disease

Project ID: 201103

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: Sonia Sheth

2nd Place: Using Missing Momentum to Select Higgs Decay to Charm Quarks in a Muon-Ion Collider

Project ID: 190978

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Physics & Astronomy

Students: Pavan Ahluwalia

3rd Place: ENStaDTI: Predicting Drug-Target Interaction Using Ensemble of Node Embedding and Stacking Ensemble Machine Learning Classifier for Drug Repurposing
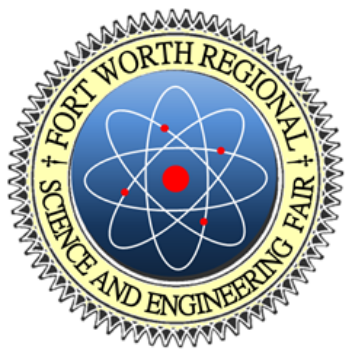
Project ID: 204031

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Computer Science

Students: Shreya Amalapurapu

2023 Fort Worth Regional Science and Engineering Fair

Lockheed Martin Leadership Association

1st Place: The Theoretical Application of Proton Exchange Membrane Fuel Cells to Power a Blended Wing Body Aircraft with Modified Wing Tips

Project ID: 192134

School: Colleyville Heritage High School

Division: Senior

Category: Energy & Transportation

Students: Gage Wallace, Tiana Nguyen, Eduardo Burciaga-Ichikawa

2nd Place: IVY: An Intelligent Vision System for the Visually Impaired

Project ID: 201121

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Sarang Goel

3rd Place: Mitigating the Harmful Effects of Radiation Therapy with the Synergistic Effects of Curcumin Bioavailability and Piperine on Dugesia dorotocephala
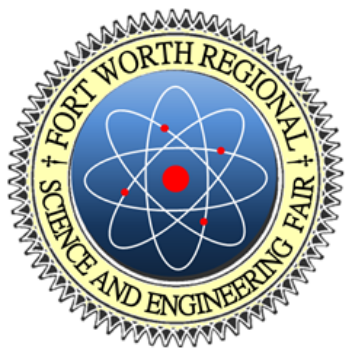
Project ID: 191546

School: Colleyville Heritage High School

Division: Senior

Category: Animal Sciences

Students: Aliza Tharani

2023 Fort Worth Regional Science and Engineering Fair

NASA Earth System Science Award

1st Place: Comprehensive Dataset Utilizing Meteorological and Topographical Feature Data for Next-Day Wildfire Spread Prediction

Project ID: 200941

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Earth & Planetary Sciences

Students: Anish Goel, Aditya Singirikonda

2nd Place: From Piquant to Pure: Evaluating the Effectiveness of Electro Desalination in a Water Bottle

Project ID: 191339

School: Colleyville Heritage High School

Division: Senior

Category: Earth & Planetary Sciences

Students: Aislina Hudda

3rd Place: Development of Abraham Model Correlations for Describing Solute Transfer into Transcutol Based on Molar Solubility Ratios for Pharmaceutical and Other Organic Compounds
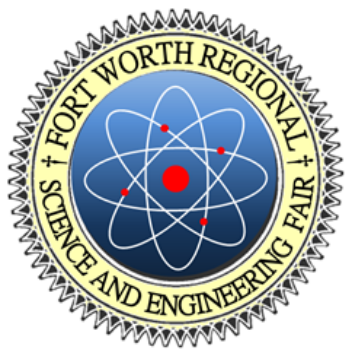
Project ID: 198910

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Earth & Planetary Sciences

Students: Sneha Sinha, Nikita Shanmugam

2023 Fort Worth Regional Science and Engineering Fair

National Geographic Society

1st Place: Tame the Flame: Assessing the Flammability of Construction Materials and Developing a Fireproof Coating To Reduce The Damage of Homes From Wildfires
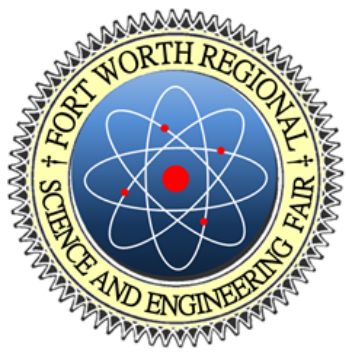
Project ID: 196271

School: Colleyville Heritage High School

Division: Senior

Category: Earth & Planetary Sciences

Students: Kaitlyn McKillop

2023 Fort Worth Regional Science and Engineering Fair

National Oceanic & Atmospheric Administration

1st Place: Comprehensive Dataset Utilizing Meteorological and Topographical Feature Data for Next-Day Wildfire Spread Prediction

Project ID: 200941

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Earth & Planetary Sciences

Students: Anish Goel, Aditya Singirikonda

2nd Place: Tame the Flame: Assessing the Flammability of Construction Materials and Developing a Fireproof Coating To Reduce The Damage of Homes From Wildfires
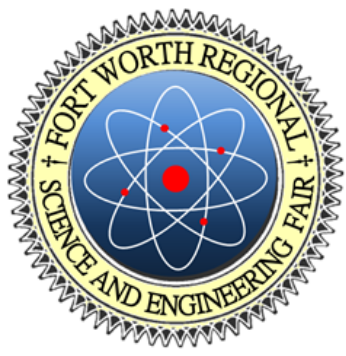
Project ID: 196271

School: Colleyville Heritage High School

Division: Senior

Category: Earth & Planetary Sciences

Students: Kaitlyn McKillop

2023 Fort Worth Regional Science and Engineering Fair

Native Plant Society Award

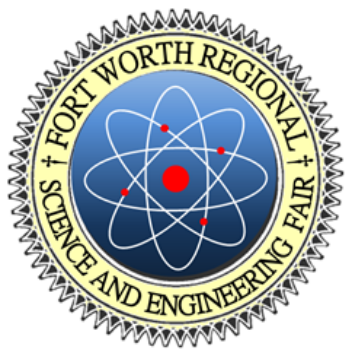**1st Place:** Enhancing the Efficiency and Sustainability of Green Roof Gardening Systems

Project ID: 191545

School: Colleyville Heritage High School

Division: Senior

Category: Environmental Management & Sciences

Students: Lily Heilhecker

2023 Fort Worth Regional Science and Engineering Fair

Office of Naval Research - U.S. Navy and U.S Marine Corps

1st Place: Using Missing Momentum to Select Higgs Decay to Charm Quarks in a Muon-Ion Collider

Project ID: 190978

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Physics & Astronomy

Students: Pavan Ahluwalia

1st Place: Synthesizing Curcumin-Infused Hydrogel to Inhibit Oral Fungal Formation Caused by Asthma Inhalers

Project ID: 191538

School: Colleyville Heritage High School

Division: Senior

Category: Engineering: Materials & Bioengineering

Students: Abbie Ha

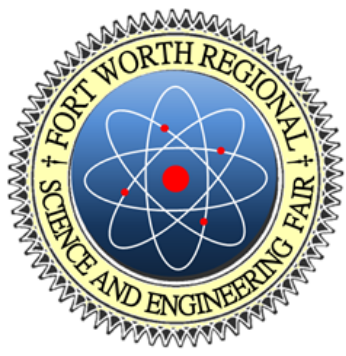**1st Place:** The Nature of Multiphase Filaments in the Centers of Galaxy Clusters

Project ID: 200975

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Physics & Astronomy

Students: Sampadaa Prakash

2023 Fort Worth Regional Science and Engineering Fair

Office of Naval Research - U.S. Navy and U.S Marine Corps

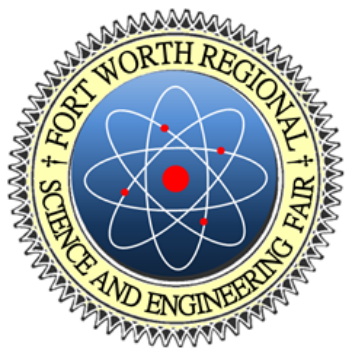**1st Place:** IVY: An Intelligent Vision System for the Visually Impaired

Project ID: 201121

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Sarang Goel

2023 Fort Worth Regional Science and Engineering Fair

Regeneron Biomedical Science Award

1st Place: TNF Ligand Promotes Angiogenesis in Triple Negative Breast Cancer Through Activation of Inflammatory Regulatory Networks

Project ID: 205775

School: Marcus High School

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: Harsh Singh

2nd Place: Reducing metal-induced radical formation of cysteic acid during hair bleaching through the addition of EDTA

Project ID: 197519

School: Colleyville Heritage High School

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: Kayli Hutsell, Kate Jones

3rd Place: Gotta Stay Awake! Investigating the Effects of Optimal Caffeine Alternatives on Drosophila melanogaster Circadian Cycles
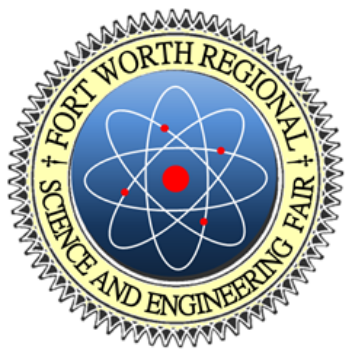
Project ID: 191558

School: Colleyville Heritage High School

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: Akshitha Yarlagadda

2023 Fort Worth Regional Science and Engineering Fair

Regeneron Biomedical Science Award

1st Alt: Drug Delivery To The Cardiac Myosin Via Lipid Nanoparticles

Project ID: 201120

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: Nikhil Copling

2nd Alt: Analyzing the Synergistic Effects of Ethylenediaminetetraacetic acid and Green Tea Extract with Ampicillin in Inhibiting E-Coli K-12 Growth
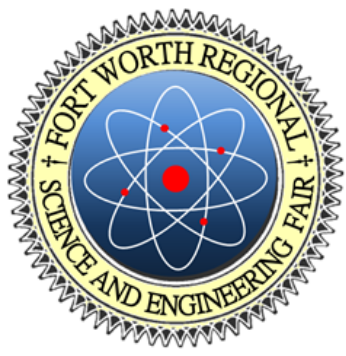
Project ID: 194968

School: Colleyville Heritage High School

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: David Hoff

2023 Fort Worth Regional Science and Engineering Fair

Ricoh Sustainable Development Award

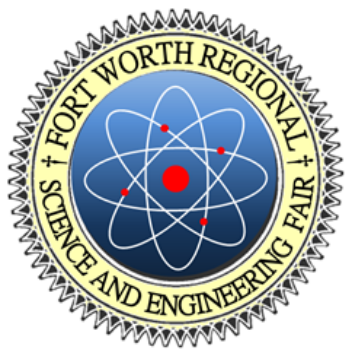**1st Place:** Spored of E-coli? Mycofiltration: Utilizing Mycellium to Filter Contaminated Drinking Water

Project ID: 191336

School: Colleyville Heritage High School

Division: Senior

Category: Environmental Management & Sciences

Students: Brianna Salaices

2023 Fort Worth Regional Science and Engineering Fair

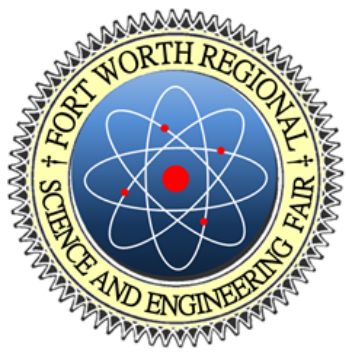## Society of Allied Weight Engineers - Texas Chapter

1st Place: Hoverboard

Project ID: 204097

School: Harmony Science Academy Carrollton - High School

Division: Senior

Category: Physics & Astronomy

Students: Caidin Albury, Elijah Gorena

2023 Fort Worth Regional Science and Engineering Fair

Society of Flight Test Engineers - North Texas Chapter

1st Place: The Theoretical Application of Proton Exchange Membrane Fuel Cells to Power a Blended Wing Body Aircraft with Modified Wing Tips
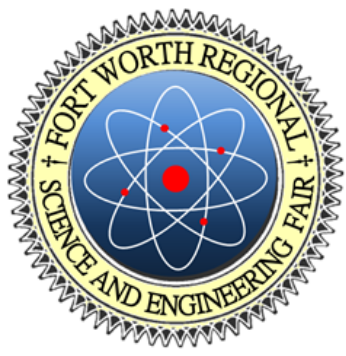
Project ID: 192134

School: Colleyville Heritage High School

Division: Senior

Category: Energy & Transportation

Students: Gage Wallace, Tiana Nguyen, Eduardo Burciaga-Ichikawa

2023 Fort Worth Regional Science and Engineering Fair

Stockholm Junior Water Prize

1st Place: Spored of E-coli? Mycofiltration: Utilizing Mycellium to Filter Contaminated Drinking Water

Project ID: 191336

School: Colleyville Heritage High School

Division: Senior

Category: Environmental Management & Sciences

Students: Brianna Salaices

2nd Place: From Piquant to Pure: Evaluating the Effectiveness of Electro Desalination in a Water Bottle

Project ID: 191339

School: Colleyville Heritage High School

Division: Senior

Category: Earth & Planetary Sciences

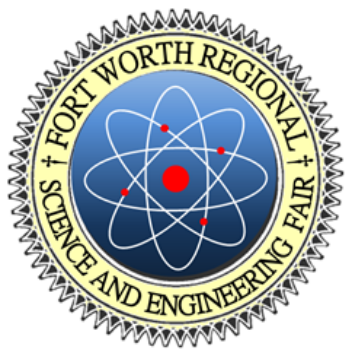**Students:** Aislina Hudda

3rd Place: Steam Distillation

Project ID: 202318

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Chemistry

Students: Rose Usman

2023 Fort Worth Regional Science and Engineering Fair

U.S. Agency for International Development

1st Place: Analysis and Prediction of Energy Usage for a State-based Appliance: Washing Machine Case Study
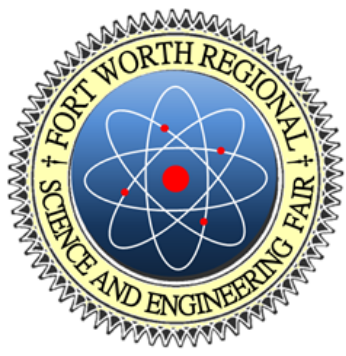
Project ID: 202874

School: The Oakridge School

Division: Senior

Category: Environmental Management & Sciences

Students: Eshan Singhal

2023 Fort Worth Regional Science and Engineering Fair

US Air Force

1st Place: The Theoretical Application of Proton Exchange Membrane Fuel Cells to Power a Blended Wing Body Aircraft with Modified Wing Tips

Project ID: 192134

School: Colleyville Heritage High School

Division: Senior

Category: Energy & Transportation

Students: Gage Wallace, Tiana Nguyen, Eduardo Burciaga-Ichikawa

1st Place: See Me Move: Employing Tri-Categorical Joint Classification For A Novel Human Tracking Method With Semantic Feature Extraction

Project ID: 200872

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Computer Science

Students: Akhil Krishnamurthy, Arihan Varanasi

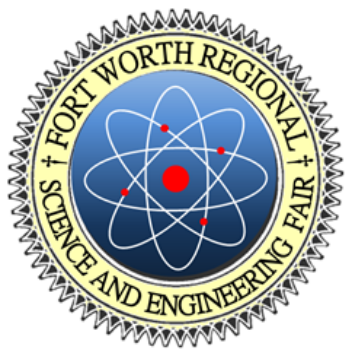**1st Place:** Active Distributed Denial-of-Service (DDoS) as SmokeScreen Detection in IP Networks.

Project ID: 201104

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Computer Science

Students: Saksham Shori

2023 Fort Worth Regional Science and Engineering Fair

US Air Force

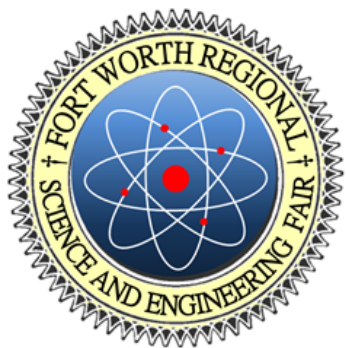**1st Place:** The Typing Test: An Analysis of the Potential Applications of Piezoelectricity

Project ID: 207013

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Engineering: Electrical & Mechanical

Students: Isabella Ahuactzin, Elizabeth Hoskins

2023 Fort Worth Regional Science and Engineering Fair

US Metric Assn

1st Place: Designing a Novel Prophylactic In-Vitro Transcribing RNA Vector Vaccine Against Human Metapneumovirus (hMPV)

Project ID: 209071

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Chemistry

Students: Lauren-Gabrielle Yraola

2nd Place: The Study and Synthesis of Agarose-predicated Hydrogels and their Effect on the Proliferation of Nannochloropsis Oculata and the Phenotypic Integrity of Lemna Minor

Project ID: 207874

School: Flower Mound High School

Division: Senior

Category: Earth & Planetary Sciences

Students: David Trujillo

3rd Place: Synthesizing an In-Vitro Transcribing Vector for the Development of a Novel RNA Vaccine Against the ARAH1 Peanut Allergy with the R255A cGAS Protein
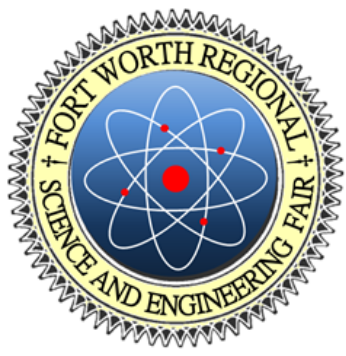
Project ID: 207462

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Microbiology

Students: Enzo Sagun

2023 Fort Worth Regional Science and Engineering Fair

UTA College of Science

1st Place: TNF Ligand Promotes Angiogenesis in Triple Negative Breast Cancer Through Activation of Inflammatory Regulatory Networks

Project ID: 205775

School: Marcus High School

Division: Senior

Category: Biochemistry, Cellular, & Molecular Biology

Students: Harsh Singh

2nd Place: Psychopathy, Intellectual Humility, and Social Media: A Strategy to Prevent School Shootings?

Project ID: 199625

School: Martin STEM School

Division: Senior

Category: Behavioral & Social Sciences

Students: Maya Shah

3rd Place: Mitigating the Harmful Effects of Radiation Therapy with the Synergistic Effects of Curcumin Bioavailability and Piperine on Dugesia dorotocephala
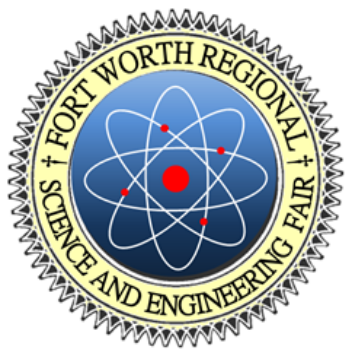
Project ID: 191546

School: Colleyville Heritage High School

Division: Senior

Category: Animal Sciences

Students: Aliza Tharani

1st Place: A Novel Semi-Automatic EEG Pre-Processing Pipeline for Optimizing Studies of Deep Brain Signals & Seizure Prediction

Project ID: 204190

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Computer Science

Students: Brandy Xie

2nd Place: Bioassay Test -Part 2- What is the amount of adsorbent for each lead concentration that helps early seedling growth?
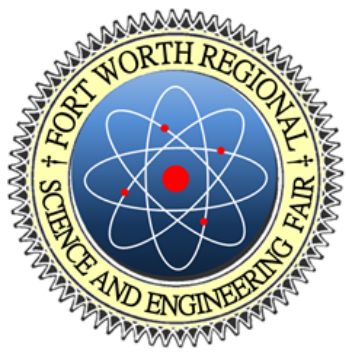
Project ID: 198513

School: Harmony School Of Innovation High School (Fort Worth)

Division: Senior

Category: Earth & Planetary Sciences

Students: Shriya Menon

2023 Fort Worth Regional Science and Engineering Fair

Yale Science and Engineering Association Award

1st Place: Leveraging State-of-the-art Al and Machine Learning Methods to Personalize Clinical Management, Therapeutic Strategies, and Prognostication

Project ID: 201153

School: Texas Academy Of Mathematics And Sciences HS

Division: Senior

Category: Medicine & Health Sciences

Students: Rifa Gowani