Association for Computer Educators in Texas

Navigating the Digital Frontier
Innovations and Challenges in Computer Education

ACET
Association for Computer Educators in Texas

Promoting Computer Education and Research in Texas

60th Annual Conference
7 November 2025

Mc Graw Hill

Baylor University

Cengage

ACET 2025 Conference Schedule

November 7, 2025

Start	Stop	Location	Event
7:30am	8:10am	Jones Lobby	Registration and Continental Breakfast
8:10am	8:15	Jones Lobby	**Welcome from ACET** President Dr. Ridwan Noel Associate Professor Texas Lutheran University
8:15am	8:30am	Jones Lobby	**Welcome to Baylor** Dr. Bill Booth Baylor University
8:30am	9:30am	Jones Lobby	**Essential Cybersecurity Best Practices and Threat Prevention** Dr. Jeremy McCormick Program Director/Professor, Computer Information Systems McLennan Community College
9:30am	10:00am	H 101	**Flipping the Computer Science Classroom Lessons Learned from Teaching Object-Oriented Programming** Dr. Ridwan Rashid Noel Texas Lutheran University
10:00am	10:30am	H 101	**Bridging AI Literacy and Applied Design Experiential Pathways in Computing Education** Ray Aria, Shohreh Hashemi University of Houston Downtown
10:30am	10:45am	Jones Lobby	Break
10:45am	11:15am	H 101	**Considerations on Dark Web** Dr. Stefan Andrei Cleveland State University
11:15am	11:45am	H 101	**Empowering Education with AI From Classroom to Campus Leadership** Brooke Warner, MBA (she/her) Director of Sales Programs, SIMnet

ACET 2025 Conference Schedule

November 7, 2025

Start	Stop	Location	Event
11:45am	1:00pm	Jones Lobby	**Lunch/Keynote** **Embracing the AI Revolution** **Transforming Computer Science Education** Dr. Victor R. Prybutok G. Brint Ryan Endowed Professor University of North Texas
1:00pm	1:45pm	Jones Lobby	**Student Poster Presentations** **and voting for best poster**
2:15pm	2:45pm	C 311	**Proposing a Gen AI Ethics Curriculum for Undergraduate Programs** Dr. Matthew Fendt Baylor University
2:45pm	3:45pm	C 311	**Developing Cybersecurity Pathways for Upskilling and Transitioning Texas Community College Students** Dr. Gahangir Hossain, Dr. Tozammel Hossain University of North Texas
3:45pm	4:00pm	Jones Lobby	Break Vote for officers
4:00pm	4:30pm	C 311	**Strategies for Incorporating AI and GenAI Tools in IS Curriculum** Ray Aria, Shohreh Hashemi University of Houston Downtown
4:30pm	5:00pm	C 311	**Sketching with Personal Data** Dr. Rachel Wilkerson Baylor University
5:00pm	5:30pm	Jones Lobby	Student Poster Results Elections Notification
5:30pm	6:00pm	Jones Lobby	**ACET Board Meeting**

Presentations

Poster Presentations

Presentations and Speakers

Essential Cybersecurity Best Practices and Threat Prevention

Dr. Jeremy McCormick
Program Director/Professor, Computer Information Systems
McLennan Community College

Dr. Jeremy McCormick is the Program Director and a Professor for the Computer Information Systems Department at McLennan Community College (MCC). He serves as the Head of the McLennan Cyber Defense Center with MCC and as the Director of Training for the Central Texas Cyber Range in collaboration with Baylor University. Jeremy has worked in the information technology industry since 1996 in a variety of roles including instruction in higher education for 18 years. He has earned a Master of Science in Cybersecurity Technology and a Doctor of Information Technology in Information Assurance and Cybersecurity.

Flipping the Computer Science Classroom: Lessons Learned from Teaching Object-Oriented Programming

Dr. Ridwan Rashid Noel, Texas Lutheran University

Traditional lecture-based teaching often limits student participation and hands-on practice in computer science courses. This presentation shares the experience of using a flipped classroom model in CSCI 249 (Object-Oriented Programming), where students reviewed brief handouts and short videos before class and spent class time coding, solving problems, and working together. The goal was to help students better understand key OOP concepts through active practice and discussion. Feedback and performance

results showed that students were more engaged, gained confidence in coding, and collaborated more naturally with their classmates. The presentation also discusses challenges such as keeping students prepared and managing time effectively, offering practical insights for making programming classes more interactive and student-centered.

Bridging AI Literacy and Applied Design: Experiential Pathways in Computing Education

Ray Aria, University of Houston Downtown
Shohreh Hashemi, University of Houston Downtown

The rapid expansion of artificial intelligence (AI) and digital transformation continues to redefine how educators prepare students for the future of computing and business. This paper introduces an integrative pedagogical framework that connects conceptual AI literacy with hands-on design practice through two complementary undergraduate courses at the University of Houston–Downtown: MIS 4390 AI Applications in Business and MIS 4312 Application Analysis, Design, and Implementation. Grounded in research on human-centered digital governance and experiential learning, MIS 4390 cultivates progressive skill development through structured discussions, weekly exercises, and applied projects that strengthen both ethical judgment and technical fluency in AI. MIS 4312 then extends this foundation through a service-oriented, client-based capstone model, in which student teams design and implement technology solutions for real organizations across diverse industries. Taken together, these courses illustrate a scalable and civic-minded model for integrating AI, systems design, and ethical engagement within computing education. Results from MIS 4312 reveal increased student motivation, interdisciplinary collaboration, and deeper awareness of responsible computing practices. This framework ultimately

contributes to ongoing academic conversations on experiential and human-centered approaches to computer education and offers a replicable model for institutions seeking to align ethical reasoning with technical competence.

Considerations on Dark Web, in the context of Open and Deep Web

Dr. Stefan Andrei (Cleveland State University)

This paper describes some of the technical details of the dark web in the context of Open and Deep Web. Using dark web is neither entirely good nor bad, but a complex technology with significant implications for both privacy and security.

Empowering Education with AI: From Classroom to Campus Leadership

Alicia Jahant - Enterprise Account Manager - Alicia Jahant is an Enterprise Account Manager at McGraw Hill. She works with higher education institutions in Texas bringing innovative solutions to students, faculty and administrators.

Brooke Warner- Sales Director, SIMnet - Brooke Warner is the Director of Sales for the SIMnet Sales Team. She works nationwide to develop innovative, customer-focused solutions for courses in Computer Concepts, Computer Applications and Microsoft Office training.

Embracing the AI Revolution: Transforming Computer Science Education

Dr. Victor R. Prybutok
G. Brint Ryan Endowed Professor
University of North Texas

Proposing a Gen AI Ethics Curriculum for Undergraduate Programs

Dr. Matthew Fendt, Baylor University

Whether university educators like it or not, generative AI systems like ChatGPT are commonly used by undergraduate students as both an aid to complete their assignments and as a source of knowledge. Universities have had to consider gen AI's place in their programs, with responses spanning the range from forbidding gen AI to wholeheartedly embracing it. Regardless of their position, it will be increasingly important for universities to offer some education on gen AI to their students, including its appropriate application and ethical use.

A required gen AI ethics course in a university's undergraduate program is essential to providing the students the university's position on gen AI in the classroom. In this talk, I will examine partner institutions' approaches to offering these ethics classes and some of the courses' most salient topics. Since my university does not require a gen AI ethics course, I will discuss my university's optional paid extended learning gen AI ethics course and its required non-AI ethics course. I will propose some topics and learning outcomes for a hypothetically required gen AI ethics course that incorporates elements of ethics courses from partner universities, the extended learning course, and the general ethics course. This proposed course could be created to be one-credit hour or a module in an existing ethics course. Finally, I will ask

for audience feedback on gen AI ethics being taught at their universities or topics that they believe should be taught in such a course.

Developing Cybersecurity Pathways for Upskilling and Transitioning Texas Community College Students

Dr. Gahangir Hossain, University of North Texas
Dr. Tozammel Hossain, University of North Texas

This study investigates STEM and computing curricula from minority-serving community colleges in the West Texas region, focusing on addressing existing gaps in cybersecurity and privacy education while enhancing workforce readiness and student marketability. The initiative establishes a 2+2 transfer pathway—two years at a community college followed by two years at the University of North Texas (UNT)—leading to a Bachelor of Science in Information Science and/or Data Science with a concentration in Cybersecurity. The research team has collaborated closely with three community colleges to design and refine this pathway. Comprehensive course mapping has been conducted to ensure alignment between community college programs and UNT's curriculum. Several institutions already offer advanced computing certificates, and their input has been instrumental in aligning prerequisite mathematics and computing courses. While most course mappings have been finalized, the team is currently completing the alignment for one remaining course. The proposed pathway is under review by UNT's transfer office. In parallel, the project continues to strengthen institutional partnerships through ongoing communication, joint seminars, and shared research activities. Additionally, community college students are provided opportunities to enroll in certificate programs with scholarship support, facilitating a seamless transition into the bachelor's degree program and promoting equitable access to cybersecurity education across the West Texas region.

Strategies for Incorporating AI and GenAI Tools in IS Curriculum

Ray Aria, University of Houston Downtown
Shohreh Hashemi, University of Houston Downtown

The accelerated advances in applications of Artificial Intelligence (AI) and AI tools in businesses are reshaping and transforming the business landscape. As businesses embed AI technologies into their business functions and rely on intelligent systems for automation, innovation, and decision-making, there is an urgent need for the Information Systems (IS) curriculum to evolve, providing students with the AI knowledge and skills to navigate and lead in AI-enhanced business functions at AI-driven industries. Today's IS graduates must have a broad logical and ethical understanding of AI and be proficient in utilizing AI tools. The thoughtful redesign of the IS curriculum should encompass a combination of technical and practical applications of AI, where the fundamentals of AI are coupled with hands-on practices with AI tools. Such a holistic strategic IS curriculum can effectively leverage and promote students' potential for career readiness.

This article outlines strategic approaches for embedding AI and AI tools into IS curriculum, beginning with a core course that covers foundational concepts including machine learning, neural networks, natural language processing, and AI ethics, combined with a series of hands-on practices with AI tools such as Generative AI (GenAI tools), Paython and Azure, and discussing the use of real-world case studies to enhance students' ability to apply AI in business decision-making and operational contexts. Furthermore, including relevant IS course-related coverage of AI and AI tools in every IS course provides students with practical insights on how AI and AI tools are used in the context of the IS course topic. For example, coverage of Copilot in Microsoft Office applications courses, coverage of ERBuilder AI, Vertica AI-powered Analytics, ChatGPT / OpenAI Codex and ER/Studio with AI extensions in the database courses, coverage of Power BI (with AI Insights) and Azure in business analytics courses, and MS Project Copilot,

Wrike, ClickUp AI and Asana + AI-powered Insights in IS project management courses.
This article also outlines strategies for interdisciplinary collaboration to foster innovation and critical thinking in graduates. By leveraging partnerships across business faculties and disciplines, including finance, marketing, supply chain disciplines, to offer cross-listed, project-based courses that utilize GenAI tools like ChatGPT, DALL·E, Amazon Forecast (AWS), Infor Supply Chain Planning (SCP), Persado, Drift, Zest AI, and GitHub Copilot. These initiatives not only develop technical and strategic competencies but also address essential topics such as AI governance, data privacy, and algorithmic bias. Together, these strategies aim to produce college graduates who are both aware of AI and its ethical applications in their field of study and are technically proficient in utilizing AI tools, ready to lead in an AI-enhanced business environment. Examples of an enhanced IS curriculum and a core course in AI in Business are provided.

Sketching with Personal Data

Dr. Rachel Wilkerson (Baylor University)

Sketching plays an important role in data science education, enabling students to iterate designs quickly. Through an exercise in sketching with personal data, students experiment quickly with different mappings of data attributes to aesthetics. Personal data reinforces the importance of the data collection process to the ultimate data visualization.

Poster Presentations

Predicting Water Efficiency and Crop Yield in Smart Agriculture Systems

Advika Govindarajan, Baylor University
Paula Tovar, Baylor University

Water scarcity remains a critical challenge in modern agriculture, particularly in drought-prone regions such as California. This issue is further amplified in extraterrestrial environments, where transporting water is expensive, making efficient irrigation strategies essential for future space farming systems. In both contexts, mindful water usage is vital to maximize crop yield and ensure long-term sustainability. This research investigates how environmental factors including soil composition, temperature, humidity, and sunlight exposure interact to influence crop density, growth stages, and water efficiency. Using a comprehensive dataset of field measurements, we applied a PyTorch-based neural network to uncover nonlinear relationships between environmental conditions, plant development, and water consumption. Results demonstrate that the model reliably predicts water usage and crop yield across varying environmental scenarios. The model identifies key drivers of yield optimization and generates predictive insights to support intelligent, data-driven irrigation scheduling and water conservation efforts. These findings highlight the potential of machine learning to enhance irrigation efficiency and contribute to sustainable agricultural innovation. Our approach focuses on learning from real-world agricultural data to inform adaptive strategies that respond to changing environmental conditions. By modeling these diverse interactions, we aim to support farmers and agricultural systems in making more informed decisions about water allocation whether in resource-limited regions on Earth or in future extraterrestrial habitats.

Automated Sports Highlight Generation Using NLP and Neural Networks

Roy Cannedy, Baylor University
Elijah Kelley, Baylor University

Traditional sports highlight generation relies primarily on statistical thresholds, failing to capture the emotional and contextual significance that makes moments truly memorable. This research presents an automated system that combines Natural Language Processing (NLP) and neural networks to generate personalized sports highlight summaries by analyzing both game commentary and box score statistics.

Our approach implements a multi-stage pipeline: (1) NLP processing using spaCy and NLTK for sentiment analysis, named entity recognition, and event classification from commentary text; (2) feature engineering that combines textual excitement signals with statistical context including game timing and player performance; (3) neural network models using PyTorch, including feedforward classifiers and LSTM-based rankers with attention mechanisms, to score each moment's highlight-worthiness; and (4) personalization algorithms that adapt rankings based on user preferences for specific players or play types.

Comparative analysis demonstrates that our NLP-enhanced approach significantly outperforms statistics-only methods by understanding narrative importance through commentary language patterns. The system successfully identifies clutch moments, momentum shifts, and emotionally significant plays that pure statistical analysis overlooks. Results show the model achieves high accuracy in matching human-selected highlights while enabling scalable, automated generation of customized 90-second recap summaries. This work demonstrates practical applications of machine learning and NLP in sports analytics, content personalization, and automated media generation.

SpiritVerse: A Natural Language Processing Tool for Biblical Studies

Erik Aars, Baylor University
Lukas John, Baylor University

Bible reading is a central aspect of a Christian's spiritual life, but for many believers, reading the Bible chapter by chapter can feel overwhelming or difficult to retain. This project presents an alternative approach to Bible study by using Natural Language Processing (NLP) to analyze verses and identify others with similar meanings or emotional tones. The goal of this project is to help readers engage with the Word of God (Biblical text) more deeply by connecting related passages across Scripture, enabling a more personalized and reflective spiritual experience. Using tools such as the nltk library, our model was trained on the book of Romans from the King James Version of the Bible. The model applies sentiment analysis to each verse and identifies five verses that share a comparable sentiment or thematic connection. During development, the model also extracted keywords that frequently appeared throughout Romans, providing further insight into major themes of the book. To evaluate the project's effectiveness, several Ph.D. religion professors were surveyed through Google Forms to determine whether the model could enhance a Christian's spiritual life or positively impact ministry practice. The survey results suggest that the model has strong potential to support Bible engagement, helping readers study smaller sections at a time while still drawing meaningful connections across Scripture. Ultimately, this project demonstrates how modern technology can serve as a valuable tool for spiritual growth and reflection.

Using NLPs and Recommender Systems to Aid Literature Review

Anugraka Soundararajan, Baylor University
Raynah Cheng, Baylor University

Conducting literature reviews can be a time-consuming and repetitive process, particularly when researchers must sift through large databases to identify relevant studies. To address this challenge, we developed a natural language processing (NLP)-based recommender system that automates paper similarity searches and keyword extraction to streamline the literature review process. Our approach combines four datasets of research abstracts into a unified corpus using Pandas, where the data was cleaned by removing duplicates and missing values, then randomly shuffled to sample 10,000 papers due to RAM limitations. We used NLTK to eliminate stopwords and pycountry to filter out country names that introduced noise. The cleaned abstracts were vectorized using TFIDF, and cosine similarity was applied to compute likeness among papers, which we called abstract similarity. For each user-provided abstract, along with specified values for the number of keywords and papers, our model identifies the top-n keywords and retrieves the n-most similar papers ranked by their similarity scores. We developed a simple keyword similarity algorithm to calculate a score between user abstract keywords and recommended paper abstract keywords. Keyword overlap between user inputs and recommended papers remained relatively high, with both keyword and abstract similarity scores exceeding 0. We further validated the system using both recent and older PubMed paper abstracts, confirming its ability to generalize beyond the training data. This project demonstrates the practical use of NLP and item-based filtering in research discovery. We envision expanding this tool to accelerate future literature reviews across biomedical and computational research domains.

Movie to Book Recommendation System

Joshua Stein, Baylor University
Sheridan Prejean, Baylor University

When trying to have a discussion about book with our friends, we often find that many of them do not read very much, due to a time barrier and lack of interest. However, when discussing movies, we have not seen this problem. To get more people back into reading books, we have natural language processing and recommender systems to take descriptions of various movies and recommend books to people based on what movies they may prefer. We used wordnet to identify synonyms and recommended books to users based on the similarity of the descriptions, as well as the books rating and the number of reviews the book received. To figure out which books and movies were similar, we extracted key words from the descriptions and added them to the data frame as a separate column. This column was then accessed and judged based on similarity to the descriptions given by the selected movie from the movies data frame. This ultimately gives a suggested reading list tailored to the user in order to improve their interest in reading.

Reddit Political Sentiment as a Predictor of Market Volatility

Daniela Frealy, Baylor University
Anika Dachiraju, Baylor University

In the modern stock market, there are many routes an investor can take when trading, and many factors, such as politics, that affect market volatility. Many indicators and data points can inform an investor's trading decisions, but one of the most important predictors of stock price changes is overall market sentiment. In this project, we have developed a tool to analyze political opinions from unofficial sources in order to predict daily fluctuations

in the stock market. Data was web-scraped from Reddit, an online discussion platform that contains topic-based subreddit communities. We focused on threads that discussed political sentiment and market-related news, specifically on posts from the market after-hours or within the first few hours of market opening. An NLP was applied to determine weighted positive or negative indicators regarding each stock. The stocks are sorted and displayed by volatility, as determined by the NLP, to inform traders of that day's overall market sentiment. The NLP results are sorted into price rises (bearish) and price falls (bullish), and the difference between the market open and market close prices is used to compare them. This tool helps traders conduct more efficient research in a rapidly changing political climate using online discussions on Reddit.

Transforming Lecture Notes into Learning Tools: An AI-Driven Question Generation System

Michael Ukonu, Baylor University
Aiden Bojorquez, Baylor University

Oftentimes students take notes but fail to revisit them. Many assume that writing or typing notes is sufficient in solidifying their understanding of lecture material. This tool addresses that problem allowing students to make their lecture notes work for them, generating personalized questions to help them study. This tool is effective because it automates the creation of study guides, training a model to analyze and extract key concepts. We imported NLTK, RAKE, common NLTK stop words, the Punkt tokenizer and a pipeline to make the process as efficient as possible, at least for now. After importing all of these things, the user sets our variable "lect_notes" to their lecture notes, and our program strips the notes of whitespaces. It then creates a RAKE instance called R and uses that instance to identify important keywords/key phrases

from the notes, extract them, and print them to the screen for the user to see. After this, it sets a variable "quest_gen" to a text-to-text pipeline. It then creates a loop that generates one question per key phrase/keyword extracted and prints that question to the screen. The final version of our program should have a cleaned-up output that is easy for the user to read and understand and could implement some accessibility features. This automated learning assistant revolutionizes the way students value and engage with their class notes. This tool demonstrates how artificial intelligence can enhance routine activities like taking notes, enhancing their usability and maximizing student productivity.

Sentiment Analysis from Movie Overviews

Issac Wolfe, Baylor University
Zb Bishop, Baylor University

When reading a movie overview it can be hard to estimate the quality of the movie just based on the text. It can give you an idea of what the genre is, maybe who is starring in the movie, and some plot points, but there is no guarantee of quality. We are interested if there are any certain words or phrases in the movie overview that can give an indication of the quality of the movie. We set up an account on (https://www.themoviedb.org/?language=en-US), used the API of The Movie Database, and curated a csv file of ten thousand movies with at least two hundred user scores. We made a histogram of the data and found that the data is fairly left skewed so we set a score of six as a neutral review and scores below that are counted as negative and ones over that are positive. The further the scores get from six the more they are weighted, so an eight out of ten is weighted more heavily than a seven out of ten. We linked the sentiment scores with each overview and modeled it. This needs improving so we will pull key phrases and actor names and depending on the user scores from those we can weight those more positively or negatively so that we can have better predictive accuracy.

Mental Health Disorder Detector

Raphael Siewen, Baylor University

Mental Health classification systems, such as DSM-5, are still not well understood by the public. This leads those facing issues like depression, anxiety, or autism may postpone seeking treatment or miss out on more effective coping mechanisms. This project uses natural language processing (NLP) to help identify possible mental health conditions using nthe DSM-5. We start by extracting the text from the DSM-5 using pdfplumber library.

Using Python's regular expression library, we extracted Section II: Diagnostic Criteria and Codes, which includes the name of the mental health disorders along with their diagnostic criteria. From this section, we compile a structured list of disorders, including Dissociative Disorders, Neurocognitive Disorders, and Neurodevelopmental Disorders, and arrange the information in a Pandas DataFrame. Then, we use spaCy to analyze the text, conducting tokenization, lemmatization, and named entity recognition. This process allows us to automatically identify disorder names and related symptom phrases.

The dataset that was produced links symptoms to specific disorders and can be used to train machine learning or neural network models that predict possible mental health conditions based on reported symptoms.

Combing regular expression extraction with NLP-driven entity recognition, our approach provides a practical and easy way to help individuals recognize mental health issues they may not have previously identified. Ultimately, this system aims to bridge the gap between complex clinical classifications and public understanding, supporting earlier awareness, intervention, and access to care.

Integrating Financial News Sentiment with Price Data for Enhanced Short-Term Stock Market Prediction

Mahika Palani, Baylor University
Raleigh Tognela, Baylor University

This project investigates whether sentiment analysis of financial news headlines can improve short-term stock market trend prediction compared to using historical price data alone. Using a dataset of daily financial headlines paired with corresponding stock market indices, we trained a sentiment analysis model to quantify the overall market tone and integrated these sentiment scores with traditional time-series price models. We then compared the predictive accuracy of the combined sentiment-price model against a baseline model that relied solely on past price movements. Preliminary results indicate that incorporating sentiment data slightly improves next-day trend prediction accuracy, particularly during high-volatility periods when market sentiment shifts rapidly. Our findings suggest that natural language cues from financial media provide valuable contextual information that complements quantitative price trends in short-term forecasting.

Predicting Economic Losses from U.S. Natural Disasters Using Machine Learning

Varsha Upadhyayulla, Baylor University
Wellborn Fuller, Baylor University

This project focuses on predicting the economic losses caused by natural disasters in the United States using machine learning models. Natural disasters such as hurricanes, floods, and wildfires result in billions of dollars in damages each year, and accurately forecasting their financial impact can improve disaster preparedness and recovery planning. This project utilizes two main datasets: the US Natural Disaster Declarations and Forecasting Disaster Management in 2024 datasets. These include features such

as disaster type, location, magnitude, fatalities, and date. After cleaning and preprocessing the data, economic loss was treated as a regression target and several models were trained including Linear Regression, Random Forest, and XGBoost to estimate financial impacts. Model performance was evaluated using metrics such as MAE, RMSE, and R^2. By identifying which factors most influence disaster costs, this project aims to develop a predictive tool that could assist governments, emergency management team, and the general public in optimizing resource allocation and improving response strategies.

Ducting Stress or Fatigue From Facial Images

Cooper Crow, Baylor University
Ellie Skaarer, Baylor University

Mental health has been brought to the forefront of medical psychology in recent years. The ability to classify and quantify early physical stress indicators allows the medical community to reactively treat the growing group of patients struggling with phycological difficulties. Using the computational theory of Neural Networks through packages such as Keras or Pytorch's CNN model, the ability to accurately classify images. The objective of this model is to accurately distinguish between various emotions and determine which images depict stress indicators and use explainable AI methods such as Grad-CAM to show what areas of the picture the model used to make its predictions. This project would be using the stress faces dataset found on Kaggle. This dataset would be used in supervised learning since it comes with a test and training sets that have tags determining whether the greyed image is stressed or not. The application of this model would allow for real-time detection for mental wellness monitoring. This would allow for quicker diagnosis of phycological diseases with symptoms of stress.

Generative AI's Place in Education

Sterling Matthews, Baylor University

Generative AI is an increasingly powerful tool that can be used by students and teachers alike, helping spark creativity and form trains of thought when they might be lost for thought. It is certain that AI can expedite any creative process, this comes with the inherent risk of plagiarism that generative AI brings through its content generation methods. This raises questions about academic dishonesty and loss of creativity in classes. A solution to this could be the inclusion of explanations of content generated by AI by students in class. Making students critically evaluate products made by generative AI can show students that it is a tool instead of just a way around hard work and an understanding of the topic. These methods work to include the evolution of technology into our classrooms while still preserving the core aspects of unique and creative thought that students should be cultivating.

Analysis of Miami Weather Conditions

Drin Ymeri, Baylor University
Jaedon Ibarrola, Baylor University

Here, we are using a variety of statistical models to analyze and predict present and future weather conditions in the city of Miami in the US state of Florida. We have taken multiple datasets, mainly from governmental sources, and compiled them into a manner where they can be linked together in a useful way. These datasets contain multiple types of weather data, such as temperature, pressure, humidity, wind speed and direction, as well as cloud cover. This data is meant for predicting future temperatures at varying future dates. We use statistical techniques such as the random forest, decision tree, and old fashioned regression to carry out our project. We hope that this project can be useful for showing a conceptual design for a weather predictor.

Text to 3D Environment Visualisation

Aum Pandya, Baylor University

This project investigates how natural language can be transformed into interactive 3D environments using a text-to-3D generation system. The goal is to develop a tool that interprets written descriptions, identifies key objects, their relative sizes, and spatial relationships, and then generates accurate 3D visualizations. Using the spaCy library, text is processed to extract entities and relationships, which are translated into placement rules to form coherent environments without spatial overlap. These environments are rendered using Three.js, allowing users to explore the generated scenes in a fully navigable 3D space. The results demonstrate that natural language can be effectively mapped into structured visual representations, making spatial visualization faster and more intuitive. Beyond applications in design and prototyping, this technology shows strong potential for patient communication and education in the medical field—enabling healthcare professionals to generate visual explanations of procedures, treatment spaces, or medical concepts directly from text, improving understanding and accessibility for patients.

Advancing Sentiment Analysis of Amazon Reviews

Olivia Pon, Baylor University
Thomas Nguyen, Baylor University

Our project applies natural language processing (NLP) techniques to analyze customer sentiment from Amazon product reviews, with the goal of automatically classifying reviews as positive, negative, or neutral. This analysis provides valuable insights into customer satisfaction trends and helps businesses make data-driven decisions regarding product improvements and marketing strategies. By

comparing traditional machine learning methods with modern transformer-based architectures, we aim to demonstrate how advancements in NLP can improve the accuracy and depth of sentiment analysis and understanding. The dataset used consists of publicly available Amazon product reviews containing both textual feedback and star ratings. Preprocessing steps include removing stopwords, handling punctuation, and tokenizing text to standardize it for model input. Two models are implemented for comparison: a TF-IDF (Term Frequency–Inverse Document Frequency) approach paired with a Logistic Regression classifier, and a DistilBERT model, a lightweight transformer architecture fine-tuned for sentiment classification. The TF-IDF model captures word frequency patterns, while DistilBERT leverages deep contextual embeddings to interpret language nuances and relationships between words. Model evaluation is performed using accuracy, F1-score, precision, recall, and confusion matrices to ensure a well-rounded performance assessment. We will also examine examples of misclassified reviews to understand where traditional methods fail compared to transformer-based ones, particularly in cases involving sarcasm, mixed emotions, or indirect and hard-to-tell sentiment. Ultimately, this project demonstrates the progression from simple text-mining methods to advanced deep learning frameworks in the field of sentiment analysis. Beyond academic exploration, the results have practical applications in improving e-commerce recommendation systems, enhancing automated customer feedback tools, and supporting data-driven decision-making processes in retail and consumer analytics. Through this study, we highlight how NLP continues to bridge the gap between raw textual data and actionable business intelligence.

Food Deal Recommender Systems

Jacob Dieguez, Baylor University

We will scrape daily food deal information from html to find what deals are in local places, and use that plus a series of personal scores on what food groups the user likes to visit. We will then use this to recommend to the user a small series of up to 10 places for the user to visit at that exact moment based on the best deal and where they are most likely to want to eat anyway.

Meal Recommender System

Nadia Chi, Baylor University
Nina Ngeno, Baylor University

Meal planning can be time-consuming and overwhelming, especially when trying to decide what to cook each week. This meal recommender system is a machine learning-based system designed to help users discover diverse meal options tailored to their personal preferences. The tool will collect user input of favorite foods, meal types, and allergies. Using a dataset that contains thousands of entries, each of which includes recipe names, descriptions, ingredients, cooking instructions, and meal tags, the system utilizes the Surprise library in Python to build a recommender model. The Surprise library is efficient at implementing algorithms for collaborative filtering and dataset handling to predict user preferences. By analyzing similarities between recipes and user feedback, the model aims to recommend diverse meal options. Over time, it improves suggestions through user feedback and learns which recipes best fit the individual's taste. Ultimately, this system hopes to make meal planning simple and easy and enhance the cooking experience.

On Brain-To-Text Translation: The Ability to Predict Text from EEG Data

Dr. Ridwan Rashid Noel, Texas Lutheran University
Conner Petty, Texas Lutheran University

Brain-to-text translation is a relatively new concept within the fields of machine learning and neuroscience. It employs machine learning models to capture complex patterns in brain signals and translate brain activity into text. Most earlier studies used electroencephalography (EEG) data for this purpose, while others relied on functional magnetic resonance imaging (fMRI) or magnetoencephalography (MEG). In this work, we aim to determine whether brain-to-text translation can be achieved using end-to-end convolutional neural network (CNN) and attention models trained entirely from scratch. Our motivation stems from the fact that earlier work in this field often relied on pretrained models, and some employed teacher forcing during training. We used the ZuCo 2.0 dataset, specifically the natural reading portion, to train our models. Due to computational and time limitations, we used only 5 samples per subject (90 total) to train two models with identical architectures. One model used an unbalanced split of the dataset and achieved a word error rate (WER) of 71.88%, while the other used a balanced split and achieved a WER of 79.37%. The techniques employed show that it is possible to translate EEG data into words using basic CNN-Attention architecture with connectionist temporal classification (CTC) loss. For tokenization, we used byte-pair encoding (BPE) and did not apply beam-search decoding to improve output correctness. These results provide evidence that meaningful patterns are captured by the model within EEG data and that the model is not merely guessing or hallucinating its predictions.

Developing Cybersecurity Pathways for Upskilling and Transitioning Texas Community College Students

Gahangir Hossain, University of North Texas
Tozammel Hossain, University of North Texas

This study investigates STEM and computing curricula from minority-serving community colleges in the West Texas region, focusing on addressing existing gaps in cybersecurity and privacy education while enhancing workforce readiness and student marketability. The initiative establishes a 2+2 transfer pathway—two years at a community college followed by two years at the University of North Texas (UNT)—leading to a Bachelor of Science in Information Science and/or Data Science with a concentration in Cybersecurity. The research team has collaborated closely with three community colleges to design and refine this pathway. Comprehensive course mapping has been conducted to ensure alignment between community college programs and UNT's curriculum. Several institutions already offer advanced computing certificates, and their input has been instrumental in aligning prerequisite mathematics and computing courses. While most course mappings have been finalized, the team is currently completing the alignment for one remaining course. The proposed pathway is under review by UNT's transfer office. In parallel, the project continues to strengthen institutional partnerships through ongoing communication, joint seminars, and shared research activities. Additionally, community college students are provided opportunities to enroll in certificate programs with scholarship support, facilitating a seamless transition into the bachelor's degree program and promoting equitable access to cybersecurity education across the West Texas region.

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