Association for Computer Educators in Texas

Empowering Minds: The Future of Computer Education

ACET
Association for Computer Educators in Texas

Promoting Computer Education and Research in Texas

59th Annual Conference
1 November 2024

ACET 2024 Conference Schedule

Topic: ACET - 2024 Conference
Time: Nov. 1, 2024 08:30 AM Central Time (US and Canada)

Time	Title	Authors
Good morning to All.		
08:30- 08:50	Welcome and Keynote Speaker (Dr. Sam Hijazi, title: "Redefining Technology: Opportunity Over Opposition"	
08:50-09:00	Questions, Discussion, Breaks	
09:00-09:20	Advanced Neural Video Captioning	Sufiyan Ahmed Mohammed
9:20-9:30	Questions, Discussion, Breaks	
09:30-09:50	Blockchain-Based Software License Management	Venkata Sai Lankesh Karuturi
09:50-10:00	Questions, Discussion, Breaks	
10:00-10:20	Creating a Successful Interdisciplinary Project-Based Class that Includes Students in Faculty Research	Matthew Fendt
10:30-10:50	The Psychological and Social Impact of AI in Daily Life	Leigh Smith, Sam Hijazi
10:50-11:00	Questions, Discussion, Breaks	
11:00-11:20	Finding an Optimal Small Sample of Training Dataset for Computer Vision Deep-Learning Models	Mandeep Kaur, Hashandeep Singh
11:20-11:30	Questions, Discussion, Breaks	
11:30-11:50	Visualizing Recursion: Using Physical Models to Simplify the Understanding of Recursive Algorithms in Python	Mark McCreary
12:00-01:00	**Lunch**	

Time	Title	Authors
01:00-01:20	Effective ways for teaching cloud computing concepts	Stefan Andrei
01:20-01:30	Questions, Discussion, Breaks	
01:30-1:50	Leveraging AVL and Red-Black Trees for Virtual Machine Placement: A Gateway to Teaching Advanced Algorithms and Data Structures while Fostering Undergraduate Research	Rose Rani John, William Booth
01:50-02:00	Questions, Discussion, Breaks	
02:00-02:20	Optimizing XGBoost Hyperparameters for Network Intrusion Detection	Sumit Sah, Bikram Shahi, Soumili Nayak, Ankita Bhardwaj
02:20-02:30	Questions, Discussion, Breaks	
02:30-02:50	Real-Time Hand Pose Extraction for Human-Computer Interaction Using Computer Vision	Ashutosh Arora, Tanvi Saxena
02:50-3:00	Questions, Discussion, Breaks	
03:00-03:20	Robust Background Subtraction in Traffic Environments	Mehulkumar Patel
03:20-03:30	Questions, Discussion, Breaks	
03:30-03:50	Securing Wireless Sensor Network from Rank Attack Using Fast Sensor Data Encryption and Decryption Protocol	Eden Hunde
03:50-04:00	Questions, Discussion, Breaks	
04:00-04:20	Evaluating the Role of AI Chatbots in Addressing Global Challenges and Image Generation	Ridwan Noel
04:20-04:30	Questions, Discussion, Breaks	
04:30-4:50	The Impact of Mastery Exams on Authentic Student Engagement	William Booth
04:50-05:00	Questions, Discussion, Breaks	
05:00-05:20	Investing in AI Education: A Strategic Initiative for Business and Economic Advancement	Sam Hijazi, Jesus Carmona
05:20-05:30	Questions, Discussion, Breaks	

Creating a Successful Interdisciplinary Project-Based Class that Includes Students in Faculty Research

Dr. Matthew Fendt (Baylor University)

The capstone course is a project-based class that serves graduating seniors as a bridge between academia and their professional careers. In recent years, we have begun integrating our multiple majors (Computer Science, Data Science, and Bioinformatics) into the same course. The resulting interdisciplinary teams allow the students to take on more complex projects and allow practice working with teammates with a variety of different specialties. Baylor research faculty and industry sponsors provide real-world projects for the teams to solve, such as leopard seal image detection, multilingual Bible translation, and searching gene expression regulators. Selecting ongoing research projects increases student interest and buy-in for the class.

While students may have worked in small team projects in prior classes, our programs do not include many experiences of working on slightly larger teams to iteratively develop a single product over the course of an entire semester. Teaching the students the Agile philosophy using a modified version of Scrum helps them work effectively on a team and prepares them for working on similar situations in industry.

In this talk, I will discuss insights on how to successfully structure and lead interdisciplinary teams. I will give suggestions on building connections with faculty and industry partners and curation of the topics so that they are of appropriate scope for a semester's work. Finally, I will share my experience adapting this industry practice to the classroom and addressing common areas of difficulty that students have working in Scrums.

The Psychological and Social Impact of AI in Daily Life

Leigh Smith, Dr. Sam Hijazi (Texas Lutheran University)

The following paper will touch upon some psychological and social effects AI has on everyday life: on productivity, emotional well-being, and ethical issues. AI technology increases productivity by automating routine tasks and helping to make decisions; though this scope is increasingly important to reconsider in respect of human autonomy, critical thinking, and dependency. Interaction with AI therefore influences emotional well-being too—the probable influence of changed trust, empathy, and social skills during which one may come to rely on AI-mediated responses lacking in real emotional depth. Besides, other ethical challenges like bias or fairness in AI affect societal trust, especially in fields related to hiring and health care. Such effects at any rate are a proper balancing of technological innovation with ethical and cultural consideration aimed at the minimization of negative outcomes. This present study has brought into relief the need for the quiet integration of AI in society by adopting a human-centered approach, and personal agency with social connection keeping pace with technological progress.

Visualizing Recursion: Using Physical Models to Simplify the Understanding of Recursive Algorithms in Python

Mark McCreary (Baylor University)

In computer science education, abstract ideas often pose significant challenges for students. Recursion is a particularly complex concept which many students struggle to understand. To bridge this gap, physical models offer a hands-on approach to enhance comprehension. By transforming abstract recursive algorithms into physical representations, students can visualize and interact with the principles, making the learning process more intuitive and engaging. This presentation explores the process of physical modeling in teaching recursion, providing a practical example and demonstration of how this method can simplify the understanding of recursive functions in Python.

Effective ways for teaching cloud computing concepts

Dr. Stefan Andrei (Cuza University)

Cloud computing is an information technology (IT) paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility. Simply put, cloud computing is the delivery of computing services – servers, storage, databases, networking, software, analytics and more – over the Internet ("the cloud"). Companies offering these computing services are called cloud providers and typically charge for cloud computing services based on usage.

Our presentation will discuss in more details about virtualization and MapReduce. Virtualization is the ability to run multiple operating systems on a single physical system and share the underlying hardware resources. It is the process by which one computer hosts the appearance of many computers. Virtualization is used to improve IT throughput and costs by using physical resources as a pool from which virtual resources can be allocated. MapReduce facilitates concurrent processing by splitting petabytes of data into smaller chunks, and processing them in parallel on Hadoop commodity servers. In the end, it aggregates all the data from multiple servers to return a consolidated output back to the application. For example, a Hadoop cluster with 20,000 inexpensive commodity servers and 256MB block of data in each, can process around 5TB of data at the same time. This reduces the processing time as compared to sequential processing of such a large data set.

Leveraging AVL and Red-Black Trees for Virtual Machine Placement: A Gateway to Teaching Advanced Algorithms and Data Structures while Fostering Undergraduate Research

Rose Rani John (Baylor University)
Dr. William Booth (Baylor University)

Integrating advanced data structures like AVL and Red-Black trees into the solution of virtual machine (VM) placement problem offers a compelling method for teaching undergraduate students complex algorithms and data structures. This approach not only elucidates the practical applications of these trees in optimizing VM allocation but also provides a rich context for students to engage in advanced problem-solving. By applying these data structures to real-world scenarios, students can better grasp the intricacies of balancing, rotations, and tree properties, making the abstract more tangible and relevant. Furthermore, this pedagogical strategy serves as a catalyst for undergraduate research, encouraging students to explore the intersection of theory and practice. Through research projects that extend this approach, students can contribute to the broader field of computer science, cultivating a research-oriented mindset early in their academic careers. This talk will outline the introduction to the virtual machine placement problem, algorithmic solution using AVL and Red Black Trees, Implementation of Trees in Solving the VM Placement Problem, Instructional Methodology and Implications for Undergraduate Research.

Evaluating the Role of AI Chatbots in Addressing Global Challenges

Ridwan Noel (Texas Lutheran University)

This research comprehensively explores the multifaceted role of AI chatbots in addressing contemporary global challenges. The study specifically assesses leading AI chatbots, including ChatGPT, Google Gemini, and Microsoft Copilot, by comparing their responses to human inputs on critical issues such as global politics, environmental challenges, and public health crises. The primary objective is to evaluate the accuracy, reliability, and overall effectiveness of these chatbots in providing valuable insights into complex, real-world problems that are essential for informed decision-making. By fostering inclusivity and equity, this research underscores the importance of developing responsible AI technologies that effectively serve society. Ultimately, this study highlights the potential of AI chatbots in facilitating well-informed discussions and contributing meaningfully to diverse applications in public discourse.

The Impact of Mastery Exams on Authentic Student Engagement

Dr. William Booth (Baylor University)

This presentation explores the role of Mastery Exams in fostering authentic engagement in academic settings, particularly within computer science. Mastery Exams are designed to evaluate a student's knowledge and comprehension. This study investigates how the use of Mastery Exams influences students' commitment to learning and motivation to engage deeply with course material. Drawing on both quantitative data and qualitative feedback from students, this research reveals the positive impact of Mastery Exams in encouraging a growth mindset, self-directed learning, and more authentic engagement with the subject matter. By analyzing patterns of student performance and engagement metrics, this presentation offers insights into how educators can leverage Mastery Exams to enhance the educational experience, cultivating deeper intellectual curiosity and engagement.

Investing in AI Education: A Strategic Initiative for Business and Economic Advancement

Dr. Sam Hijazi (Texas Lutheran University)
Jesus Carmona (Texas Lutheran University)

This paper emphasized AI education in business in order to create a future-ready workforce. Today, AI has increased profitability and productivity for a corporation. AI has a vast range of applications within corporations, ranging from marketing and sales to the IT sector. While AI-based automation is of significant economic benefit, it also evokes some key ethical issues related to autonomy, confidence, and dependence. It advocates revising business curricula with AI, data analytics, and machine learning, driven by practice-oriented learning through partnerships and real-life simulations. Indeed, a balanced approach to the integration of AI education would substantially help overcome skill gaps yet more responsibly and ethically. Developments in AI thus bring benefits on both the individual and societal levels. The initiative aims to foster long-term growth, improve job opportunities, and enhance community resiliency in response to the rapid advancement of technology.

Roundtable Discussion: Exploring AI in Education – Curriculum Innovation, Evaluation, and Academic Integrity"

Dr. Sam Hijazi (Texas Lutheran University)
Prof. Shohreh Hashemi (University of Houston Downtown)

Faculty from Computer Science, Business, and Information Systems will talk about the revolutionary effects of artificial intelligence (AI) in academics at this roundtable discussion led by Dr. Sam Hijazi and Shohreh Hashemi. As AI technologies get better, teachers face new challenges and chances when they try to use these tools in their teaching and grading. The talk will focus on how AI can be used in the real world to create curriculum, including personalized learning paths and creating content on the fly. The topic of conversation will also include the use of AI in grading and evaluations, with a focus on the pros and cons of automated grading systems and the rules that must be followed for a fair and accurate evaluation of student work.

This talk will be about academic honesty, specifically how AI can help find plagiarism and how students can legally use AI. Professors will look at the limits of what AI can do to help with homework and what it can't do, setting clear rules for students. This panel of experts from different fields wants to provide a unified structure by sharing ideas, best practices, and ethical issues in order to make teaching more effective, uphold academic standards, and encourage the balanced use of AI in schools.

Program Committee

Program Chair

Dr. Ridwan Noel, Texas Lutheran University, USA.

Program Committee

Dr. Ridwan Noel, Texas Lutheran University, USA.
Dr. Sam Hijazi, Texas Lutheran University, USA.
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