

KMIT 2-2 PS Projects

Project Title	Project Description	Technologies	Mentor	Room	Max Groups	Information on Project	Additional Comments	Slide Deck
GenAI_Med Diagnosis_Drug_Design	The advent of GenAI has brought forth the potential to revolutionize the accuracy and efficiency of lung disease diagnosis, with a specific focus on CT images .One of the most significant opportunities of software development to contribute to the pharmaceutical industry is to enhance drug discovery and imaging diagnosis. Custom software solutions, such as virtual screening and molecular modeling software, contribute enormously to drug discovery process. This web app uses GenAI for lung disease diagnosis on CT images and developing drug design tools to identify active drug molecules,protein-ligand affinity prediction,protein structure prediction and autodocking using ML/GenAI.	MERN, GenAI ,ML, webhook, AWS	Dr.Devika	UDAAN	4	https://drive.google.com/file/d/1GAiREWTJJC_-bL2vzp4Z4hAw2vVjaiWc/view?usp=sharing		
GenAI_Finance_GPT	The world of finance is complex and constantly changing. Making sense of financial data can be a daunting task, even for seasoned professionals. This mobile app classifies finance documents,provide answers to the finance related questions,summarize and masking the important financial information in the financial documents using GenAI techniques.The project will explore federated learning in model training which offers privacy, security, regulatory, and economic benefits.	Flutter/Firebase, GenAI, Flutter Hooks, AWS	Dr.Devika	UDAAN	4	https://drive.google.com/file/d/1PZaOhRjWEybaiG1OkB3WXDBQzDR3571E/view?usp=sharing		
TRAVIS- TTransformer-based Assistant for Visually impaired Service agents	Transformer Based Help Desk for Visually Impaired Service Agents with voice assistance integrated project aims to design and implement a transformer based AI system developed from scratch that enables visually impaired bank representatives to handle customer queries efficiently. The system will process input queries, classify them into standardized categories, translate responses into local languages, and convert them into speech for the representative to communicate. It focuses on empowering visually impaired bank agent/representative to provide accurate, timely responses using advanced transformer-based models.	MERN,GenAI , TTS	G Badrinath	B203	4	https://youtu.be/fu0z_3hsHBg	https://github.com/Ch-Praneeth1/English_To_Telugu_Machine_Translation_Using_Transformers/blob/main/README.md https://github.com/saisuryateja055/Machine-Translation-Transformers	
TALQS- Transformer-based Architecture for Legal Question Answering and Summarization.	The legal system generates extensive and complex judgments, making it challenging for professionals and the general public to extract essential information efficiently. This project aims to design and implement Transformer-based models to address two critical objectives: summarizing legal judgments into concise and coherent summaries, and answering specific legal queries accurately based on the full text of judgments. With a dataset of judgments available in PDF format, pre-trained models like T5 and BERT optionally will be utilized to prepare annotated datasets for training.Transformers models will be developed from scratch, with randomly selected and diverse cases used to train each model independently. The summarization model will focus on providing overviews, while the question-answering model will extract precise answers from the full judgment text. Both models will be rigorously tested to evaluate their effectiveness and generalization capabilities, ensuring they meet the demands of real-world legal applications.	MERN,GenAI , TTS	G Badrinath	B203	4	https://youtu.be/UV3yHh8SSmM	https://www.kaggle.com/datasets/vangap/indian-supreme-court-judgments/data	

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AVATARLAB Building smart & realistic AI avatars	<p>Imagine this: You type a script, and within seconds, a lifelike digital avatar speaks it back with natural expressions, lip-sync, and voice modulation. Sounds futuristic? Welcome to Avatar Lab, where you bring AI-powered avatars to life!</p> <p>In this project, students will develop a cutting-edge animation pipeline that converts text into realistic talking head videos. By integrating DiffTalk for high-quality facial animation and SMALL-E for efficient speech synthesis, you'll craft an AI system that generates avatars capable of expressing emotions, syncing lip movements, and speaking just like a real human!</p> <p>With access to an RTX 4090 GPU (provided by college), your team will explore the power of deep learning, optimize inference pipelines, and push the boundaries of AI-driven animation.</p> <p>What You'll Learn:</p> <ul style="list-style-type: none"> Deep Learning for Animation – Understand how AI generates realistic facial movements. Speech Synthesis & Lip Sync – Implement models that synchronize voice with visual expression. Optimizing AI Models for Performance – Leverage GPU acceleration to make real-time avatar generation possible. Building an End-to-End AI System – Gain hands-on experience in integrating multiple deep-learning models into a seamless workflow. Innovation in Digital Media – Explore real-world applications in virtual assistants, gaming, education, and beyond! <p>Who should join? If you love AI, animation, and innovation, this project is your playground! Get ready to turn text into talking avatars and shape the future of AI-powered storytelling.</p>	<p>MERN, Models:</p> <ul style="list-style-type: none"> - DiffTalk (talking head animation) - Small-E (Speech cloning, TTS) 	Sripooja	B208	4	https://youtu.be/Y5XAF9BBK9I	<p>Research papers:</p> <ul style="list-style-type: none"> - DiffTalk - Small-E 	
CodeGenie AI companion for effortless code creation	<p>Wish you could write code effortlessly? Meet CodeGenie! Just type a prompt, and like magic, your VS Code extension will generate intelligent, context-aware code snippets in seconds!</p> <p>In this project, you'll develop a smart coding assistant powered by DeepSeek Coder, a cutting-edge AI model designed for code generation. Your extension will help developers by providing real-time code suggestions, autocompletions, and intelligent snippets, making coding faster, smarter, and more efficient.</p> <p>To make your AI-powered assistant fast and accurate, you'll get access to an RTX 4090 GPU (provided by college) for inference, letting you experience real-world AI deployment and optimization.</p> <p>What You'll Learn:</p> <ul style="list-style-type: none"> AI-Powered Code Generation – Implement and fine-tune a state-of-the-art coding LLM. Plugin Development – Learn how to build, test, and deploy a fully functional VS Code extension. Optimizing AI for Performance – Utilize GPU acceleration to enhance inference speed and efficiency. Enhancing Developer Productivity – Explore how AI can automate coding tasks and improve workflow. <p>Who should join? If you're passionate about AI, coding, and automation, this project is your gateway to building the future of smart development tools! Get ready to create the ultimate coding companion and make developers' lives easier.</p>	<p>VS code extension implementation,</p> <p>Model:</p> <p>DeepSeek-Coder (AI code generator)</p>	Sripooja	B208	4	https://youtu.be/jn-AThkq-mo	<p>Research paper:</p> <ul style="list-style-type: none"> - DeepSeek-Coder 	

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Implementing a Multi-Class Table Transformation Framework using Large Language Models for Data Integration	<p>Project Goal: To design and implement a system, TabulaX, that can automatically transform tabular data from diverse sources into consistent formats, leveraging the capabilities of Large Language Models (LLMs). This system should classify input tables into different transformation classes and apply appropriate methods for each class. The goal is to provide an interpretable, accurate, and efficient solution for data integration and transformation.</p> <p>Project Objectives:</p> <ul style="list-style-type: none"> Classification Module: Develop a classifier using an LLM to categorize input tables into four transformation classes: string-based, numerical, algorithmic, and general. The classifier should be able to distinguish between different types of data and 	Gen AI/LLM, MERN, MySQL, MongoDB	Ashok Sharma	B204	4	https://drive.google.com/file/d/12BvtCEck8noJm3YYHKHYr6iH80_W1i7/view?usp=sharing	<p>Research paper:</p> https://arxiv.org/pdf/2411.17110	<p>Slide Deck (PPTs):</p> https://drive.google.com/file/d/1HVQvL_2Lp0cfMbl2kY3QPGOP07ngNFt/view?usp=sharing
Porting LLMs to Mobile Devices & Integrating/Managing Office Tools with Language Models	<p>Project Goal: The primary goal of this project is to enable students to gain hands-on experience with deploying and evaluating large language models (LLMs) on mobile devices for question answering tasks. This involves understanding the challenges of resource-constrained environments and applying optimization techniques to achieve interactive performance.</p> <p>Project Description:</p> <ul style="list-style-type: none"> Students will explore the use of the llama.cpp framework, a flexible C++ framework, for running LLMs on mobile devices (instead of PyTorch) The project will focus on a specific pre-trained LLM, such as a quantized version of the Orca-Mini-3B model, which has 3 billion 	Gen AI, Linux Build tools, Android emulator, React (Native), Android Apps etc.	Ashok Sharma	B204	4	<p>YouTube Link:</p> https://youtu.be/VeIC4H54K9M	<p>Research Paper</p> https://arxiv.org/pdf/2404.15851	<p>Slide DEck (PPTs):</p> https://docs.google.com/presentation/d/1F4bXfAMzvbAf2dlNNCLEb_5yBq0V7vT0/edit?usp=sharing&ouid=109489917485055997646&rtopof=true&d=true
Adaptive Learning Path	<p>In today's rapidly evolving educational landscape, personalized learning approaches are the way to go, especially for children with learning difficulties. Traditional educational methods often fall short in addressing the diverse needs of such learners, leading to disengagement and limited progress. With advancements in artificial intelligence and deep learning, particularly in transformer-based models, there is an opportunity to create intelligent systems that can better understand and respond to a child's unique emotional and behavioral cues.</p> <p>ALP (Adaptive Learning Path) is an adaptive educational platform that uses transformer-based models to analyze facial expressions and gameplay behaviors of children with learning difficulties. This system will dynamically adapt the learning path of the child following challenges and feedback based on the detected emotional states promoting sustained engagement and improved learning outcomes.</p> <p>While the system adjusts the learning path in real-time, it will always prioritize and adhere to the therapist's recommended path, ensuring that the adaptive process remains aligned with professional therapeutic goals.</p>	MERN , Transformers	Sireesha	B209	4	https://drive.google.com/file/d/1TKAUDf9RRL2TfaZ-W4xqNYzSrSJBWR/view?usp=sharing	https://www.researchgate.net/publication/371503895_Smart_Road_Damage_Detection_and_Warning	
JoyVerse	<p>In the current world, leveraging technology to create personalized and adaptive learning experiences is key to supporting diverse learning needs. Dyslexic children, in particular, benefit greatly from tailored educational interventions that keep them engaged and motivated.</p> <p>JoyVerse is a transformer-powered system, which can analyze video feeds of dyslexic children playing educational games to detect their emotional states.</p> <p>This will require building state-of-the-art transformers for facial expression recognition and temporal sentiment modeling, enabling real-time optimization of game design elements such as difficulty levels, themes, and reward systems, ultimately creating a more effective and enjoyable learning environment.</p> <p>All adjustments and optimizations will be made in alignment with the therapist's guidance, ensuring the tool remains within the boundaries of recommended therapeutic approaches</p>	MERN, Transformers	Sireesha	B209	4	https://drive.google.com/file/d/1PGwp89AGyww22n1oswsxi53lxJU0-6LH/view?usp=sharing		
SafeStreet - Road Damage Detection and Alert System	<p>SafeStreet includes a dedicated mobile application for maintenance teams, streamlining road damage detection and reporting. On-field personnel can capture images and upload them directly to the system via the app, which syncs with the backend for analysis. The ViT model processes the uploaded image to classify damage, assess severity, and generate a detailed text summary. This summary highlights the type of damage, severity, and repair priority, which is shared with the relevant admin or authority through an automated email. The MERN-based web platform complements the app by offering advanced visualizations, insights, and historical analysis for road authorities.</p>	<p>Mobile App: React Native ,</p> <p>Web App: React.js, HTML, CSS, JavaScript</p> <p>Backend: Node.js, Express.js</p> <p>Database: MongoDB ,</p> <p>Machine Learning Model: Vision Transformer (ViT)</p>	Nidhi Srivastav	B210	4	https://drive.google.com/file/d/1P2RivN1Dji5upPiVPgoK46Bdc1bCZnVZ/view?usp=sharing	https://www.researchgate.net/publication/371503895_Smart_Road_Damage_Detection_and_Warning https://github.com/sekilab/RoadDamageDetector.git	

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SceneSolver - A Smart Tool for Crime Scene Investigation	SceneSolver is an AI-powered forensic platform that automates crime scene analysis using CLIP and Vision Transformers (ViT). The platform processes images to identify crime types, extract key visual evidence, and generate detailed crime scene summaries. By supporting batch processing, SceneSolver enhances the efficiency of forensic investigations, enabling professionals to analyze large amounts of visual data quickly and accurately.	Frontend: React.js, Backend: Node.js, Express.js, Database: MongoDB Machine Learning: CLIP (Contrastive Language-Image Pretraining) for crime classification. Vision Transformers (ViT) for evidence extraction and crime scene summaries. PyTorch or TensorFlow for AI model training and inference. Deployment: AWS, Heroku, or Vercel for hosting the platform. Dataset: UCF Crime Dataset for training and validation.	Nidhi Srivastav	B210	4	https://drive.google.com/file/d/1k-fhPAq2QXZALmrySFZ2P3CH4_vFgoyT/view?usp=sharing	https://www.mdpi.com/2227-7080/13/1/32 https://github.com/edward62740/Vision-Transformers-for-Violence-Detection-on-the-Edge?	
FRUITPILOT: A Vision Guided Autonomous Fruit Plucking Drone	FRUITPILOT is an innovative, vision-guided autonomous drone designed to revolutionize the fruit harvesting process. Equipped with advanced computer vision and machine learning algorithms, FRUITPILOT enables precise and efficient fruit plucking, reducing labor costs and increasing crop yields.	Frontend:HTML5,CSS,JS Backend: Python Dataset: Framework:Yolo	SAIKRISHNA	Utkarsh	4		https://pmc.ncbi.nlm.nih.gov/articles/PMC6806222/ https://pmc.ncbi.nlm.nih.gov/articles/PMC11207580/	
ParkSense: Intelligent Parking Space Detection for Smart Cities using Drone	ParkSense is an innovative, drone-based parking solution designed for smart cities. Our system utilizes a nano drone equipped with advanced computer vision and sensor fusion technologies to detect and guide drivers to available parking spaces.	Frontend:HTML5,CSS,JS Backend: Python Dataset: Platform: Edge Impulse	SAIKRISHNA	Utkarsh	4			