



Revision Dated: 18-05-2024

FYP Proposal Submission for Session 2021

It is notified for the students of session 2021 that they have to develop the idea of project and write the proposal according to the following guidelines:

- Students will contact the faculty so that faculty can take up their groups for FYP. After interviewing the students, faculty will finalize the groups which they are going to supervise.
- List of projects is attached(ideas should be chosen from provided list only), these ideas are high level description of title, students are expected to flourish idea themselves and are responsible for the defend of ideas.
- Students can form the **group of minimum two students and maximum four students**.
- Project ideas should be developed in the supervision of advisors only. Independent ideas are not allowed.
- After development of idea, it will be approved from at least two faculty members other than advisor.
- Outcome of the idea development will be the document containing the following headings:
- After approval of the project idea, students will be required to write the project proposal for which the template is provided.
- Following Deadlines will be observed in the process of project initial stage.

Report	Deadline
Finalization of Advisor and FYP Group	May 22, 2024
Development of Idea Document	May 27, 2024
Approval of Idea document and updates of idea document based on any feedbacks	May 30, 2024
Project Proposal Writing	June 15, 2024

- Learning of Project Toolkit should be completed in summer. Toolkit is attached with the document. Timeline of project milestones will be shared after completion of idea document.
- The Idea document shall contain the
 - high level details of the project(project overview)
 - concrete case study



- Related existing projects
- Expected outcome: project completion criteria(KPIs)
- Impact of Project on the local community: sustainability goals alignment with Pakistan
- major project modules
- high level project architecture diagram
- chose category of project(categories are provided on next page) with justification
- required courses, or skill set to complete project
- Details that how technically project relate to four year plan of computer science curriculum.

Defend of idea will be made through presentation and idea poster for approval of the idea. Students with rejected ideas will be given opportunity to work on new ideas.

Dr. Samyan Qayyum Wahla
Secretary FYP Committee

Prof. Dr. Usman Ghani Khan
Chairman CS Department



Project Categories for FYP Session 2021

Software Application:

In this category, students can develop the software applications with the following constraints:

- Application will be developed using the latest technologies(Technologies/versions of those technologies that are announced in the last 3 years).
- Use of any CMS e.g. Wordpress, Joomla etc is not allowed.
- Standalone android application is not allowed unless data is communicated to the server.
- Use of firebase for the database in the mobile application is not allowed.
- Project should have the complexity to be justified as FYP.
- Business Analytics are preferred.
- **Plan of commercialization/Business Plan** is compulsory in this category so that application should earn the user base and revenue.

Research Based Applications:

In this category, project can be further classified into the following subcategories.

- Data Science
- Speech Processing
- Natural Language Processing
- Computer Vision
- Bio-informatics

Following constraints should be observed in this category.

- Students have to take at least one relevant course based on subcategory. And course completion certificate is required on the completion of Fall semester.
- Use of built in algorithms/libraries is discouraged and students should at least implement 50% of used algorithms themselves.
- Datasets from the local community are preferred.
- In this category, end product will also be developed. (Latest Technologies are not compulsory)
- Plan of submission of research paper to any conference or journal is compulsory in this category.

Hybrid Category:

In hybrid category, students can select any research domain from the category 2, and commercialize their research idea using the latest technologies.

- All the constraints will be observed in this matter.
- At least one of the KPI from the research or commercialization should be fulfilled.



Toolkit for FYP Session 2021

Following tools are expected to be used during the development of FYP. Sound Knowledge of these tools is also expected from the students.

- **Project Management Tools:** Project tasks should be managed according to SDLC and available tools should be used for this purpose. These can include the following
 - Asana
 - MeisterTask
 - Jira
- **Project Documentation Tools:** All the documentation of FYP should be maintained in any wiki tools e.g. XWiki, Zoho Wiki etc.
- **Code Versioning Tools:** All the communications of tools should be done through code versioning tools e.g. git/SVN, at the end of project, these versioning tools will be used during evaluation process.
- **Code Styling:** Students should use the best practices for the coding that include proper commenting, indentation and naming conventions etc.
- **Code Documentation Tools:** code should be documented in the way, that its documentation could be generated in the form of wiki. These tools include xml comments etc.
- **Team Communication:** Team communication should be strictly performed through formal methods. These communication proof will have the role in the FYP evaluation. These formal methods should be the following:
 - Slack
 - Email
 - Skype
 - MS Teams/Zoom
 - Record Meeting minutes in case of virtual meeting or in person meetings.No other methods should be used for team communication.
- **Professional Writing Skills:** Students are expected to develop good writing skills including writing the professional reports. All the reports will be written in Latex.
- **Project Design Tools:** All the diagrams of design phase and interfaces should be drawn using the professional tools that include:
 - MS Visio/any other UML Tool for software design and database Design
 - Pencil Tool/JustInMind for project Interfaces

Sr.	Title	Description(Long descriptions are truncated)	Supervisor
1	MalDetect Bots	Malware is harmful software that sneaks into computer systems, causing damage or stealing information. These attacks are becoming more common and sophisticated, posing serious risks to	Mr. Laeeq Khan Niazi
2	Adaptive AI Enemy	Our goal is to design a game having such an advanced AI Enemy with following Behavior: 1. Detection:	Dr Muhammad Awais Hassan
3	AI-based surveillance Drone System	The project will cover drone based surveillance using anomaly detection and other irregularities and activities in the environment.	Syed Tehseen ul Hasan Shah
4	AI-Driven E-Commerce: Enhancing Customer Engagement and	This project focuses on the implementation of AI technologies in the realm of e-commerce to optimize customer engagement and boost conversion rates. By integrating AI algorithms into various facets of	Laeq Khan Niazi
5	AI-Enhanced Clinical Documentation and Note Generation	Develop an AI-powered module within the HMS that automates the creation of structured clinical notes based on physician-patient interactions. This system will assist clinicians in generating accurate	Dr. Khaldoon Khurshid
6	Animal Disease Detection & Prevention	Focuses on the development of an intelligent animal disease detection and prevention system. By integrating cutting-edge technologies like machine learning, computer vision, and IoT sensors,	Abqa Javed
7	Automated Symptom Recognition and Diagnosis	Create a generative model that analyzes patient input (such as text descriptions or interviews) and generates potential diagnoses based on	Dr. khaldoon Khurshid
8	Automatic Students Assesment	This project will focus on the need to develop a web based application that can generate exam papers for students and do automatic marking using recent GENAI techniques	Prof. Dr. Usman Ghani Khan
9	Autonomous Automotive Steel Parts Defect Detection and Sorting	An industrial grade robotic arm sorting system which will be driven with the deep learning algorithms to detect the defected parts and separate them from the correct parts.	Syed Tehseen ul Hasan Shah
10	Autonomous GPS Tracking Device for Personal Location	The project aims to develop a standalone GPS tracking device capable of accurately monitoring a person's location without the need for Wi-Fi or mobile internet connectivity. The device will incorporate	Mr. Nazeef UI Haq
11	Autoscaling of the containerized microservices	Develop a microservice based application and autoscaling the application based on advance techniques.	Mr. Numan Shafi

12	Behavior-based Intrusion Detection System (IDS)	Develop an IDS for Android devices that uses machine learning algorithms to analyze the behavior of apps and users in real-time. Instead of relying solely on signatures or predefined rules, the IDS	Dr. Faiza Iqbal
13	Blockchain-based App Integrity Verification:	Implement a blockchain-based app integrity verification mechanism for Android devices to ensure the authenticity and integrity of installed apps. Utilize data-centric networking protocols to securely transmit	Dr. Faiza Iqbal
14	Bone Fracture Detection Using X-Ray Images	The field of medical imaging has witnessed significant advancements, particularly in the analysis and detection of various diseases and conditions. In this project, aim is to develop automated techniques	Nazeef UI Haq
15	BOS meeting manager	BOS Meeting Manager is a comprehensive desktop and mobile application designed to streamline the process of BOS meeting management and documentation. From creating meeting minutes to	Dr. Faiza Iqbal
16	Containerized Auto-Scaling with LLM	Containerized Auto-Scaling with LLM	Dr. Numan Shafi
17	DeepFake Generator and Detector:	The task in this project is to identify if a Video is real or augmented with DeepFake algorithms. Due to amazing results of DeepFake videos the humans are now struggling to distinguish between real and	Prof. Dr. Usman Ghani Khan
18	e-Buddy	An immersive virtual reality (VR) experience that introduces users to an AI-driven therapeutic buddy. This AI companion, designed to emulate a best friend, engages users in personalised and empathetic	Dr Muhammad Awais Hassan
19	EduVid: Enhancing E-Learning with Text-to-Video Generation	EduVid" is a project aimed at revolutionizing e-learning by integrating text-to-video generation technology. The system automatically transforms textual educational content into engaging video lectures,	Laeq Khan Niazi
20	End-End virtual human dialogue assistant	A virtual human, which can answer to task specific queries of users using virtual reality, deep learning and NLP.	Prof. Dr. Usman Ghani Khan
21	EthicsAdvisor: AI for Islamic Ethical Guidance	EthicsAdvisor is an innovative AI-driven system designed to provide personalized ethical guidance based on Islamic principles. It aims to assist Muslims in making decisions aligned with Islamic values by	Dr. Samyan Qayyum Wahla
22	Expert System for Sugarcane CROP	Expert System for Sugarcane crop is web-based application or android application in which an expert system will be built by using any AI algorithms automatically. In this system, it will be considered	Nazeef UI Haq

23	Fruit Quality Segmentation	In this project, firstly we generate the dataset for fruit quality detection and then segmented the infected area of fruit and tell us about the name of disease that infected the fruit.	Prof. Dr. Usman Ghani Khan
24	Genome Analysis Tool	It will be a comprehensive tool that perform biological by user interactive GUI like Phylogenetic tree construction, SNP's identification, SNP's filtration, VCF file	Prof. Dr. Usman Ghani Khan
25	Immersive University: Creating a Virtual Campus in the Metaverse for	The project aims to develop an immersive virtual campus within the metaverse, allowing users to explore and interact with the university environment using augmented reality (AR) glasses. The virtual	Nazeef UI Haq
26	Intelligent Crawler	To build an intelligent Crawler, incorporating various NLP tasks will fulfill the different use cases.	Waqas Ali
27	Intelligent Malware Watchdogs: Leveraging Large Language Models	Large language models are powerful tools that can be used to detect malware with remarkable accuracy. By analyzing vast amounts of text and code, these models can identify suspicious patterns and	Laeq Khan Niazi
28	MobiCare: Adaptive AI for Senior Health and Wellness	nnovative solution designed to provide personalized monitoring and support for elderly individuals. By adaptively adjusting to changes in mobility and health status, MobiCare ensures real-time insights and	Dr. Samyan Qayyum Wahla
29	Office Automation System	A system that can read the data from the scanned images of the official documents such as medical, leave, financial, accounts etc using OCR. Based on the	Prof. Dr. Usman Ghani Khan
30	OrderSphere - A Unified All In One Ordering and Delivery Platform	The project aims to develop a comprehensive online ordering system customized for restaurants, supermarkets and others. The platform will provide seamless integration of digital ordering channels,	Aatif Hussain
31	Our Craftsman: A universal platform for immediate Assistance	Our Craftsman revolutionizes immediate assistance across various domains. Whether it's a car breakdown, plumbing emergency,	Abqa Javed
32	Precision Agriculture Drone	Design a drone equipped with computer vision and machine learning capabilities to collect and analyze aerial imagery of farmland, providing farmers with insights into crop health, soil moisture levels,	Dr. Amna Zafar
33	Quick Up chatbot	Quick Up is a computer program designed for natural language interaction, incorporating artificial intelligence techniques like NLP (Natural Language Processing) to enhance interactivity and reliability.	Ms. Abqa Javed

34	RapidHead: Streamlining Headless Project Development	RapidHead is a cutting-edge solution designed to expedite the setup and configuration process for headless development projects. With RapidHead, developers can swiftly create headless applications with	Mr. Aatif Hussain
35	RehabGuardian: AI Monitoring System for Stroke Patient Recovery	AI-driven solution designed to assist in the rehabilitation of stroke patients. It provides continuous monitoring of vital signs, physical activity, and recovery progress, delivering real-time insights and alerts	Dr. Samyan Qayyum Wahla
36	Revent	This project proposal aims to develop a Solution for efficient event photo management across web, with potential mobile integration. Key features include QR code generation for event access, secure	Ms. Abqa Javed
37	Safe City/ Safe Zone Guardian	The safety and security of citizens in urban environments are of paramount importance. With the increasing prevalence of crimes like murder and sexual assault, there is a pressing need for innovative	Ms. Abqa Javed
38	Secure Firmware Over-the-Air (FOTA) Updates	Implement a secure FOTA update mechanism for Android devices that ensures the authenticity, integrity, and confidentiality of firmware updates delivered over the air. Utilize data-centric networking	Dr. Faiza Iqbal
39	Smart SLA 3D Printer	The project will be a Stereolithography (SLA) 3D printer alongwith its controlling software/website. The 3D printer will be capable to ge thte 3D model and then 3D print it in the liquid resin.	Syed Tehseen ul Hasan Shah
40	The Exporter's loom	Many Pakistani apparel exporters lack access to essential machinery (such as sublimation, DTG, and embroidery machines) and struggle with inefficient processes. These challenges result in suboptimal	Abqa Javed
41	Trending Topics Identification from NEWS videos	Enormous amount of Urdu NEWS data is broadcaseted everyday. With around 23 NEWS channels in Pakistan, having 24/7 programming, makes it impossible to process the content manually	Prof. Dr. Muhammad Aslam
42	TrustMeter	To be discussed with Intereseted Students	Waqas Ali
43	Urban Green Spaces Identification and Classification for Smart	To develop an urban green spaces identification and classification system based on remote sensing, GIS and computer vision to identify green spaces and classification to generate a green map of the urban	Dr. Amna Zafar
44	Urdu Translator for Educational Video Lectures	Large language models (LLMs) are a promising avenue for machine translation (MT). However, current LLM-based MT systems are brittle for languages such as Urdu specifically for higher educational	Prof. Dr. Muhammad Aslam

45	Virtual Art Gallery	A virtual reality based art gallery platform for artists to exhibit their art work in a virtual gallery space. The virtual art gallery includes features such as interactive exhibits, artist profile, virtual tours to create an	Dr. Amna Zafar
46	Virtual Assistant for behavior Counseling	The use of sentiment analysis as a tool for emotional and behavioral regulation has grown in popularity. Sentiment analysis can be used to assess mood	Prof. Dr. Muhammad Aslam
47	Vision based Humanoid Robot	A humanoid robot capable to interact with its environment and process the vision data using Deep Learning.	Syed Tehseen ul Hasan Shah
48	Vita: Vision and Text Integrated Agent for Programming Interviews	advanced AI-driven tool designed to streamline and enhance programming interviews. By combining natural language processing and computer vision, Vita comprehensively evaluates candidates'	Dr. Samyan Qayyum Wahla
49	Whodunit: The Social Sleuths	Creating a social deduction game where you and your friends play roles in a fun mystery story. Some of you are regular characters, and some are sneaky troublemakers. The goal is to figure out who's who!	Dr Muhammad Awais Hassan