MSc Projects and Requirements

General Project Ideas

For each general project idea, you will find a title, a description, the skills you might be expected to develop, and an extra idea to give you some indication of possible enhancements. Feel free to take inspiration from these ideas and lead your project in your own direction – the whole point is that you can work independently.

General projects below can be supervised by many different academic staff. The aim of these projects can be understood by without too much specialist knowledge. Taking on a general project as a starting project does not mean that you do not have to think about the goals, direction, and other aspects of your project. It simply means that you have an understood starting point and initial direction. You will need to work with your supervisor to identify the specifics of your project.

General projects can be adjusted in technical depth and ambition, which means the ideas can serve as a starting point for an undergraduate or postgraduate project. You should think of each project ideas as a starting point that you can adapt and specialise depending on your level of study, interests, skills, and experience. The title of yours is completely up to you so don't get worried by any of the tiles below.

We also have a set of staff interests and project ideas, and a project archive. It is important to remember that the ideas listed are starting points. You will always need to think about the goals, direction, and other aspects of your project. Most importantly, you will need to work with your supervisor to identify the specifics of your project.

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Title: Advanced Web Application Development

Description: This project focuses on creating complex, high-performance web applications using advanced web technologies. You will learn about responsive design, client-server architecture, and integrating various APIs and databases. You will need to identify a problem to be solved, but that is something you can discuss with your supervisor. If you are unsure of what to do for your project but know that you would like to create software, this is a very sensible choice.

Skills: HTML, CSS, JavaScript, server-side languages (e.g., Node.js, Python), database technologies (e.g., MySQL, MongoDB), API integration, security best practices.

Extra Idea: You could enhance your project by incorporate some industry focus, perhaps by doing market research, a user study, or working directly with a business.

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Title: Automated Grading of Written English

Description: Develop an automated system for grading written English using natural language processing and machine learning techniques. The project aims to accurately assess grammar, vocabulary, and overall coherence of written English. You could also explore the wider ethical and social implications and biases in automated grading.

Skills: Natural Language Processing, machine learning, text analysis, ethics.

Extra Idea: Once you can accurately assess the standard of writing, you might like to see if high quality writing correlates with positive or negative sentiment in some contexts For example, do positive restaurant reviews have a better standard of English?

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Title: Social Media Sentiment Analysis for Brand Management

Description: Develop a tool for analysing social media sentiment to aid in brand management and marketing strategy development. You could work with real-time data, applying machine learning algorithms to detect public sentiment towards brands. The project also involves visualising and interpreting sentiment analysis results.

Skills: Data mining, sentiment analysis, machine learning, data visualisation.
Extra Idea: Once you are able to track movements in sentiment towards a brands, you might think about how your system can support targeted interventions that enhance brand perception.

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Title: Peer-to-Peer File Sharing System

Description: Build a peer-to-peer file sharing application, focusing on network programming and data security. The project involves creating a scalable, decentralised system that allows users to share files. You will need to address challenges in file transfer efficiency, data privacy, network security, and usability.
Skills: Network programming, distributed systems, security protocols, file handling, UI/UX design.
Extra Idea: Peer-to-Peer systems inherently provide some elements of fault tolerance and stability but present other challenges in these areas. For example, how can you maximise the ability of the system to security make files available, even when the owner of that file is not online?

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Title: Automated Plagiarism Detection

Description: Develop a software tool for detecting plagiarism in academic writing and/or source code. The project involves implementing comparison algorithms and/or machine learning models to identify the extent of similarities. The project will also need to address the procedural and ethical aspects of plagiarism and detection accuracy.
Skills: Text processing, algorithm development, machine learning, software development, ethics.
Extra Idea: Rather than thinking about plagiarism checks as a after-the-fact process that is computed on digital files, you might like to think about how plagiarism detection can be performed during the software development process or integrated into assessment practice.

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Title: Playing Games and Solving Puzzles Using AI

Description: Design and implement an AI system to play games or solve puzzles. The project includes developing algorithms that implement defined strategies and adaptive learning. You will need to test your AI in various game environments or puzzle scenarios. Picking an interesting game or puzzle to solve is a great starting point. The classics, e.g., Chess, are well studied but there are alternatives that have properties all of their own (e.g., HexCells).
Skills: Artificial intelligence, machine learning, algorithm design, programming, problem-solving.
Extra Idea: Rather than implement a single algorithm, you could present a comparative study that considers different approaches / algorithms for playing a game or solving a puzzle.

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Title: A Comparative Study of Machine Learning Algorithms

Description: Conduct a comprehensive study comparing various machine learning algorithms that solve a well-defined problem. The project involves applying classic and state-of-the-art algorithms to established datasets, analysing their performance, and understanding their strengths and limitations in particular domains. A variant of this project would be the comparison of movie recommendation algorithms. Finding sufficient and interesting data sets is vital for this project, hence exploring Kaggle and similar machine learning repositories is a good idea.
Skills: Machine learning, statistical analysis, data processing, comparative analysis, research.
Extra Idea: All machine learning algorithms are not created equal. Some require large volumes of data, some require considerable computational resources. Imposing constraints under which the algorithms must operate is one way to enhance your comparative study.

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Title: Travelling Salesperson Heuristics

Description: Explore and implement heuristic algorithms to solve the Travelling Salesperson Problem. You will evaluate the effectiveness and efficiency of selected heuristics and understand the complexities of the problem. The project includes theoretical and practical algorithm design and development, as well as the opportunity to show real-world applications of a classical problem.
Skills: Algorithm design, optimisation techniques, computational mathematics, programming skills.
Extra Idea: As interesting as it is to see the Travelling Salesperson Problem applied in the abstract, it is often more interesting to see if applied in a useful context. Finding an application domain, from delivery driving to microprocessor design, can significantly enhance the project.

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Title: Cloud-Based File Storage and Sharing System

Description: Creating a secure, scalable cloud-based file storage and sharing system. The project involves developing a cloud platform, which will require you to implement security protocols, and developing a user interface for file management.
Skills: Cloud computing, cyber security, database management, UI/UX design.
Extra Idea: Providing users with fine-grained control of the security protocols and advanced permissions that will be applied in the storage and communication of their files.

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Title: Location-aware Social Networking

Description: Develop a location-aware social networking platform. The project involves integrating geolocation technology to provide location-based services, such that individual users can benefit from interactions with users and businesses in close proximity. You will need to consider the social and ethical implementations of location-based social networking, as well as addressing privacy concerns and optimising user experiences for a mobile platform.
Skills: Mobile development, geolocation technology, data privacy, UI/UX design, ethics.
Extra Idea: Once you can permit businesses to market to prospective customers who happen to be in close proximity, you could explore ways to monetise that opportunity.

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Title: Automated Code Review Tool with AI Assistance

Description: Build an AI-tool that can perform automated code reviews. The project focuses on developing algorithms to analyse code quality, detect common bugs, and suggest improvements. You will explore a range of machine learning techniques and their application in the context of software development.
Skills: AI and machine learning, programming languages, software engineering, code analysis.
Extra Idea: If the tool can be made sufficiently autonomous, it could be applied to entire repositories in order to measure and report on code quality at-scale.

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Title: Educational Platform for Teaching Computing Programming

Description: Design an interactive platform to teach computer programming. The project involves creating a learning environment where individuals can begin learning to learn to code. You could develop dedicated learning materials, implement progress tracking, and create a user-friendly interface for instructors and learners. You are free to target any age group, experience level, programming language, concepts, or learning style.
Skills: Web development, educational theory, programming languages, UI/UX design.
Extra Idea: Gamification, peer-support, and live demonstration are all popular concepts in educational technology. You might like to see how you can integrate one or more of these approaches into your educational platform.

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Title: Real-Time Language Translation

Description: Develop a system for real-time language translation using machine learning and natural language processing. The project includes building a translation model, testing its accuracy in various languages, and optimising it for real-time performance.
Skills: Natural language processing, machine learning, software engineering, linguistics.
Extra Idea: Users who're benefiting from a Real-Time translation system are like to experience difficulties with idioms, cultural references and metaphors. You might like to explore how such a system could address these issues, or at least mitigate their impact.

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Title: Chatbot for Customer Advice

Description: Create a AI chatbot that provides customer advice and support. The project involves programming the chatbot to understand and respond to user queries effectively. It also includes testing and refining the chatbot for a wide range of customer interactions. The advent of large language models makes it tempting to think about general-purpose advice chatbots, but if you select a domain appropriately, you might be able to go further.
Skills: AI, natural language processing, chatbot development frameworks, user experience design.
Extra Idea: University regulations and legal documents are good examples of structured documentation that can be difficult to traverse. Developing a chatbot that can assist with the interpretation of these documents would be useful for all concerned.

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Title: Mobile Health Monitoring Application

Description: Develop a mobile application for health monitoring, which includes tracking vital health metrics, analysing health data, and providing health recommendations. The project will focus on user interface design, data security, and accuracy of health analysis.
Skills: Mobile app development, data analysis, health informatics, UI/UX design, data privacy.
Extra Idea: The recommendations you make will be hard to follow unless people have the right incentives. You might like to explore how gamification or goal setting approach can be used to encourage users to follow a healthy lifestyle.

Extra：Harvard CS50 Graduation Project https://cs50.harvard.edu/college/2025/spring/project/