Research Proposal Form

Student name	Hoang Van Quyet
Student number	BH00711
Date	19/08/2024
Centre name	BTEC Ha Noi
Tutor	Nguyen Thanh Trieu
Unit	Unit 13: Computing Research Project
Proposed title	Using artificial intelligence in filtering CV

Section One: Title, objective, responsibilities

Title or working title of research project (in the form of a question, objective, or hypothesis):
How Can AI Technology Be Used to Enhance the Efficiency and Fairness of Resume Screening in Recruitment?

Research project objectives (e.g., what is the question you want to answer? What do you want to learn how to do? What do you want to find out?):

- To analyze how AI-based systems can improve the speed, accuracy, and fairness of the resume screening process compared to traditional methods.
- To design and implement an AI-driven model capable of filtering resumes based on predefined criteria such as skills, experience, and education.
- To evaluate the impact of AI in reducing human bias and increasing objectivity in recruitment decisions.
- To learn how AI models process natural language data in resumes, particularly through techniques like Natural Language Processing (NLP).

Section Two: Reasons for choosing this research project

Reasons for choosing the project (e.g. links to other subjects you are studying, personal interest, future plans, knowledge/skills you want to improve, why the topic is important):

- The project is aligned with my current studies in AI and machine learning, and it offers practical applications in recruitment, a field of growing interest.
- Personal interest in improving recruitment processes by eliminating human biases and increasing efficiency.
- This project will allow me to enhance my skills in AI development, data analysis, and understanding HR technologies.
- The topic is important due to the increasing reliance on AI in business operations, especially in human resources, where AI can contribute to fairer and faster recruitment processes.

Section Three: Literature Sources Searched (Using AI to Filter CVs)

Use of key literature sources to support your research question, objective, or hypothesis:

- **Ethics of AI-Enabled Recruiting and Selection**: This review covers AI applications in recruiting, addressing ethical concerns like fairness, bias, and discrimination. It discusses how AI can optimize resume filtering while ensuring ethical considerations are met.
  Read more here(SpringerLink)
- **AI-Driven Talent Acquisition: Embracing Automation in Recruitment**: This article explains the technology behind AI resume screening tools and their practical implications, focusing on how they streamline recruitment while identifying the challenges posed by biases in AI algorithms.
  Find more details here(SpringerLink)
- **Consensus - AI Search Engine for Academic Research**: This platform provides access to a vast array of academic articles on AI applications, including filtering resumes. It summarizes insights from top research papers and allows you to explore topics related to AI-driven recruitment solutions.
  Learn more here(Consensus: AI Search Engine for Research)

Section Four: Activities and Timescales

Activities to be carried out during the research project (e.g., research, development, analysis of ideas, writing, data collection, numerical analysis, tutor meetings, production of final outcome, evaluation, writing the report) and likely durations:

1. **Research and Literature Review** (4 weeks):
   - Conduct in-depth research on AI in recruitment, including reading academic articles, industry reports, and reviewing existing AI-based recruitment tools.
   - Target: Identify gaps in the current resume screening processes that AI can address and gather the necessary data to support the project.
2. **Data Collection and Preprocessing** (3 weeks):
   - Collect and clean resume data, using publicly available datasets or synthetic resumes.
   - Preprocess the data, ensuring that it is properly formatted and labeled for training AI models.
   - Apply data augmentation techniques if necessary.
3. **Development of AI Model** (5 weeks):
   - Design and implement an AI model (e.g., using machine learning algorithms like Random Forest or SVM) capable of filtering resumes based on specified criteria.
   - Incorporate NLP techniques to extract key information from unstructured data in resumes (e.g., using word embeddings, text classification).
4. **Model Testing and Evaluation** (3 weeks):
   - Test the AI model's accuracy and efficiency by running it on a test dataset.
   - Evaluate the model's performance against traditional resume screening methods by comparing speed, accuracy, and fairness.
   - Make necessary adjustments to improve the model based on evaluation results.
5. **Final Report Writing and Presentation** (3 weeks):
   - Compile findings, evaluations, and analysis into a comprehensive report.

- Prepare a presentation summarizing the results of the research and the practical implications of using AI in resume filtering.

Section Five: Research Approach and Methodologies

Type of research approach and methodologies you are likely to use, and reasons for your choice:

- Machine Learning: Using supervised learning models to train the AI system to filter resumes based on criteria such as job experience, qualifications, and skills. Models like Random Forest or Support Vector Machines (SVM) will be considered due to their efficiency in classification tasks.
- Natural Language Processing (NLP): NLP will be used to extract meaningful insights from unstructured text in resumes, such as identifying key skills, work experience, and education.
- Quantitative Evaluation: The AI model will be evaluated quantitatively by measuring its accuracy, recall, precision, and overall effectiveness in comparison to human screening.
- Qualitative Analysis: A comparative analysis will be conducted on how AI screening impacts fairness and reduces biases, using industry reports and case studies for reference.

What your areas of research will cover:

- The technical development of AI systems for resume screening.
- Evaluation of the effectiveness of AI systems in reducing human biases in recruitment.
- Ethical concerns related to AI use in hiring processes.
- Analysis of AI-driven efficiency improvements in terms of speed and accuracy.