

Independent Study Proposal

CPSC-5960 Independent Study

PawsConnect: LinkedIn for dogs

By

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Section 1:

1.1 Project Description:

“PawsConnect: LinkedIn for dogs” would be an innovative online Software as a service (SAAS) platform dedicated to fostering a vibrant social and professional network within the realm of pet ownership. Drawing inspiration from the renowned professional networking site LinkedIn, PawsConnect aspires to create a dynamic social platform that effortlessly bridges the gap between pets and professionals, including trainers, walkers, groomers, and veterinarians.

PawsConnect would offer a dynamic social media experience, empowering users to register as either Pet Parents or Pet Professionals. Pet Parents can effortlessly create job postings tailored to their pet's needs, while Pet Professionals can easily register and apply for these opportunities. The platform also facilitates a transparent feedback system, allowing Pet Parents to rate and review their experiences with Pet Professionals, ensuring quality service.

In addition to job postings, PawsConnect would enable Pet Parents to host events for their cherished companions, fostering a vibrant and engaging community that can explore and participate in these gatherings. Users would also be able to share cherished memories through image uploads and connect with fellow pet enthusiasts. Pet Professionals, on the other hand, have the opportunity to create targeted advertisement posts for products and services related to dogs, such as toys and nutrition, expanding their reach within the community.

PawsConnect would be the ultimate networking hub for pets and their parents promising to redefine the way we connect with and care for our furry friends. Thus, the purpose of the project is to build a thriving community where pets' well-being and happiness take center stage.

1.2 Proposed Platform Features:

1. **Pet Profiles:** Allow users to create profiles for their dogs, including information such as name, breed, age, location, and bio.
2. **Pet Professionals Profiles:** Pet professionals could create their accounts and share information such as their names, contact details, and services.
3. **Networking and Connections:** Enable users to connect with other dog owners, fostering a community where they can interact and share experiences.
4. **Job Postings:** Pet parents would be able to post job requirements for services related to pet care, such as dog walking, pet sitting, grooming, and training. Pet professionals such as pet groomers, trainers, and walkers, can apply for these job postings. Users can review and rate service providers based on their experiences.
5. **Events:** Comprehensive events calendar highlighting dog-related events, workshops, seminars, and training sessions locally or online. Users can discover and join these activities to enhance their dog's skills and participate in fun activities.

6. Advertisements: Allowing companies to create posts to advertise dog food, toys, and other items.

1.3 Proposed Technologies to be used:

1. Front-end Development Techniques:
 - a. HTML/CSS: Building the structure and styling of the user interface.
 - b. JavaScript/TypeScript: Adding interactivity and functionality to the front end.
 - c. Front-end Frameworks: Using frameworks like React, and Angular for efficient UI development.
 - d. User Experience (UX) Design: Implementing user-centered design principles to create an intuitive interface.
2. Back-end Development Techniques:
 - a. Server-Side Programming: Implementing server logic using the language Node.js
 - b. RESTful API Design: Creating APIs to handle data exchange between the front-end and back-end.
 - c. Database Management: Setting up and managing databases using MongoDB.
 - d. Authentication and Authorization: Implementing user authentication and access control mechanisms.
 - e. Caching and Performance Optimization: Enhancing application speed and efficiency through caching and optimization techniques.
3. Database Techniques:
 - a. Data Modeling: Designing the database schema to efficiently store and retrieve data.
 - b. Query Optimization: Ensuring that database queries are optimized for performance.
 - c. Transactions and Concurrency Control: Managing data integrity and handling concurrent access.

1.4 Proposed Target Audience:

1. Pet Owners: Individuals who own pets and are looking for pet care services or want to connect with other pet owners.
2. Pet Care Service Providers: Businesses and individuals offering services like dog walking, pet sitting, grooming, and training.
3. Pet Enthusiasts: People passionate about pets who want to share their experiences and connect with the pet community.

Section 2:

2.1 The rationale for the study:

1. **Passion for the Idea:** I'm excited to develop the "PawsConnect: A LinkedIn for Dogs" project and make a friendly online space for both pet owners and pet professionals. While some websites help people find pet services, they're mostly for big companies. My goal is to create a place where everyone can join in and apply for simple pet-related jobs like walking dogs or giving them baths. I'm doing this because I believe that anyone who loves pets should have a chance to get involved, no matter how old they are or where they come from. I want to make it easy for everyone to take care of their furry friends and have fun together.
2. **Applied Learning and Skill Development:** Developing PawsConnect provides an exceptional opportunity for me, as a graduate student, to apply theoretical knowledge gained through coursework to a real-world project. This practical experience encompasses every facet of full-stack development, from system design to server-side scripting, database management, and cloud deployment. The project's complexity will stretch my abilities, fostering personal growth and mastery of cutting-edge technologies.
3. **Meeting a Unique Market Demand:** The pet industry is a thriving and ever-expanding market segment with a growing need for digital solutions. PawsConnect aims to fill a unique gap by offering a social and professional network exclusively for pet owners and professionals. This endeavor directly addresses an under-met demand in the market, positioning it as a solution to an evolving industry.
4. **Research and Analysis:** The process of defining the system architecture and the selection of suitable technologies for the project necessitates thorough research and analysis. As a graduate student, this project offers me the opportunity to engage in in-depth research, enhancing my analytical and problem-solving skills. The project's outcomes will be informed by data-driven decisions, reinforcing the importance of empirical research in software development.
5. **Technological Proficiency:** By immersing myself in the MERN stack (MongoDB, Express.js, React, Node.js) and other relevant technologies, I aim to achieve experience in developing a full-stack project. This knowledge will extend beyond mere theoretical comprehension; it will equip me with the skills required to navigate complex software development projects in the future, contributing to my competence as a software engineer.

2.2 Literature Survey and Current State:

While there were several pet-focused apps and social media platforms, none fully realized the concept of creating a dynamic social and professional network within the realm of pet ownership.

Some of the existing applications included Facebook Groups and Pages dedicated to pets, and pet-focused social media apps such as Petzbe, Wag, BarkHappy, Dogster, Rover, etc. focusing mostly on the social aspect and letting users upload tons of images of their beloved dogs. However, each of these platforms had their limitations.

For instance, Facebook Groups and Pages for Pets served as communities for pet enthusiasts but lacked specialized tools for pet professionals and job postings. They also lacked a structured feedback system for service providers. Pet-focused social media apps are primarily centered around sharing pet photos and videos, offering limited functionality for job postings, event hosting, or professional networking.

Pet care services booking apps, such as Rover and Wag, primarily facilitated the booking of pet care services like dog walking and pet sitting. While they served their specific purposes, they did not provide the comprehensive networking and community-building features proposed by PawsConnect.

2.3 Advantages of PawsConnect:

PawsConnect aims to distinguish itself by offering a dedicated and holistic platform for the pet community. It caters to both pet parents and pet professionals, providing them with unique platforms and opportunities.

For pet parents, PawsConnect offers the convenience of creating customized job postings tailored to their pet's needs. It also includes a transparent feedback system that allows users to rate and review their experiences with pet professionals, ensuring the delivery of quality service. Additionally, PawsConnect fosters a vibrant community by enabling users to host events for their cherished companions, share memories through image uploads, and connect with fellow pet enthusiasts.

Pet professionals, on the other hand, have the opportunity to expand their reach within the community by creating targeted advertisement posts for products and services related to dogs, such as toys and nutrition.

PawsConnect strives to be a networking hub for pets and their parents, improving the way people connect with and care for their furry friends. It distinguishes itself from existing platforms by providing a comprehensive set of features, including job postings, event hosting, networking, and feedback mechanisms, all within a dedicated and user-friendly environment that prioritizes the well-being and happiness of pets.

Section 3:

3.1 Topics to be studied:

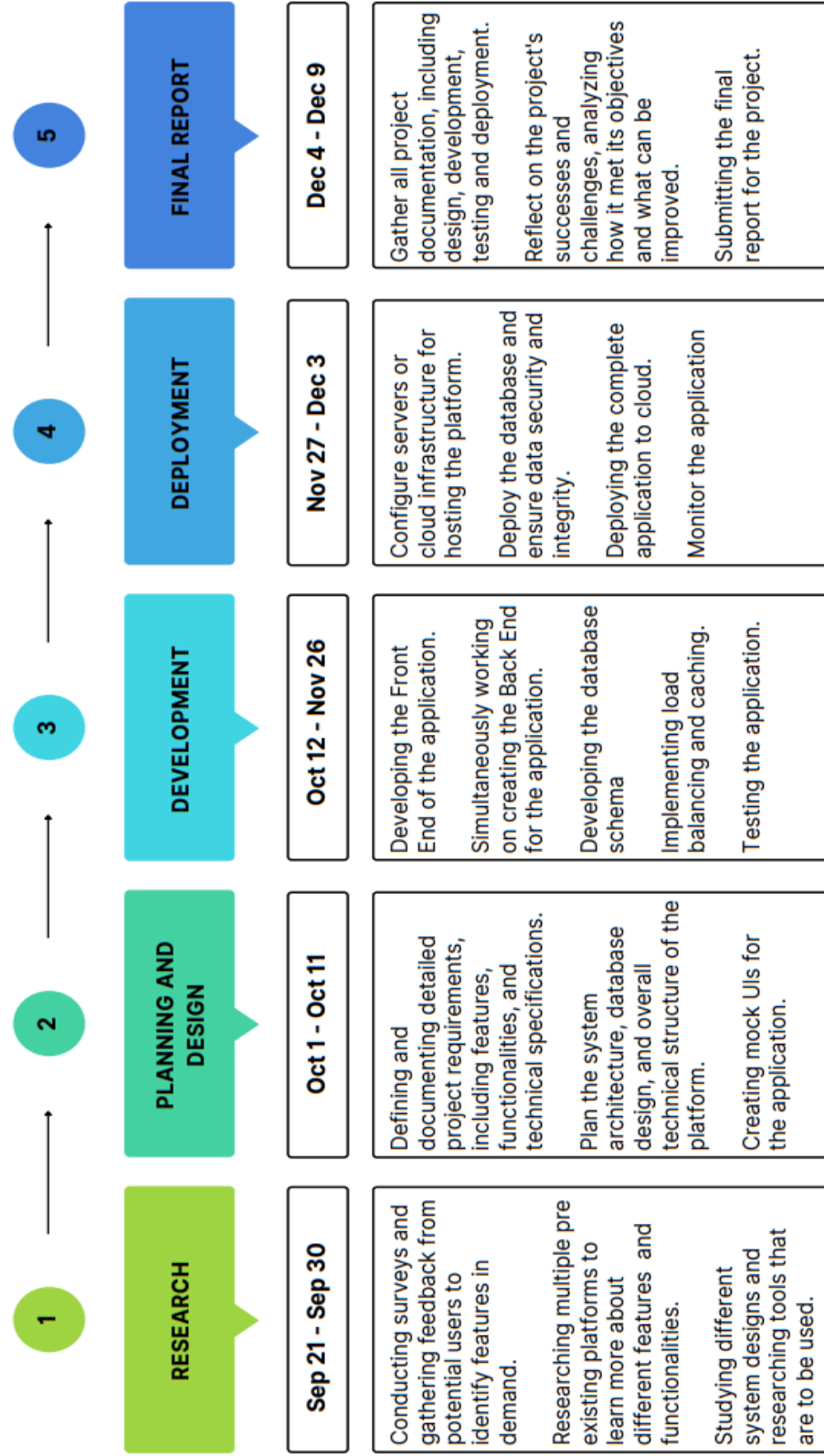
1. **MERN Stack:** Gaining proficiency in the MERN stack, encompassing MongoDB, Express.js, React, and Node.js, is vital for the seamless integration and development of the project.
2. **System Architecture:** Delving into system architecture principles helps select the proper software architecture for the project, ensuring scalability, fault tolerance, and optimal performance.
3. **API Development:** A comprehensive understanding of RESTful API design is crucial for facilitating communication between the front-end and back-end, enabling data exchange efficiently.
4. **Database Management:** Creating an efficient database schema in MongoDB to store and retrieve data.
5. **User Authentication and Authorization:** Understanding user authentication methods (e.g., JWT, OAuth) and role-based access control ensures secure access to our platform's features.
6. **Front-end Frameworks:** Apart from React, exploring alternative front-end frameworks like Angular or Vue.js helps in selecting the most suitable technology for the user interface.
7. **Caching and Performance Optimization:** Learning caching strategies and performance optimization techniques contributes to a faster and more efficient application.
8. **Cloud Services:** Exploring cloud providers is essential for deploying and managing the application in a scalable and cost-effective manner. This would help in understanding how a complete SAAS application is deployed.
9. **Documentation and API Documentation:** Creating well-documented code and APIs, using tools like Swagger/OpenAPI, aids in clarity and developer-friendliness.

3.2 Works to be read, research to be performed:

1. **Market Analysis:** Researching extensively on existing platforms is a crucial step in the development of PawsConnect. By studying similar existing platforms, I would be able to gain valuable insights, identify gaps in the market, and refine the platform's features and functionalities.
2. **User Surveys and Feedback:** Conducting surveys and gathering feedback from potential users, such as pet owners and pet care professionals. Understanding their expectations and pain points will be essential in refining the platform's features and functionalities.
3. **Academic and Technical Literature:** The foundation of this project relies on a deep understanding of full-stack development and social networking platforms. I plan to extensively research and read relevant academic papers, textbooks, and technical documentation. Key areas of focus include:
 - i. **Full-Stack Development Principles:** Investigating comprehensive texts on full-stack development to establish a strong foundational knowledge of the MERN stack and related technologies.
 - ii. **Software Architecture:** Researching different architectures that can be used to develop a social media platform. Reading on techniques of database design, caching, and load balancing to create a scalable and stable application.
 - iii. **Social Networking Theory:** Exploring academic literature on social networking platforms, their design principles, and user engagement to inform the creation of an engaging and effective user experience.

Section 4: Proposed Project Timeline

Project Timeline



Section 5:

5.1 Description of the end-product:

The final result of the PawsConnect project will be a modern online platform, available as a Software as a Service (SAAS) web application, designed to facilitate how pet owners and pet professionals connect and interact in the world of pet care.

In its essence, PawsConnect will allow users to create new accounts as either "Pet Parents" or "Pet Professionals." Pet Parents can post job listings tailored to their pet's needs, while Pet Professionals can view and apply for these opportunities. The platform will also have a review system, letting Pet Parents rate and share their experiences with Pet Professionals to ensure quality service.

Beyond job postings, PawsConnect will enable Pet Parents to organize events for their pets and engage with other pet enthusiasts. Users can also share pet memories through images and connect with like-minded individuals. Pet Professionals will have the option to post targeted advertisements for dog-related products and services, such as toys and nutrition, expanding their reach within the pet care community.

5.2 Reporting and Documentation:

Reporting:

1. Proposed weekly meetings with Professor Xin Zhao on Monday from 10 a.m. to 11 a.m. throughout the quarter.

Documentation:

1. Design Documentation: Describes the system architecture, database design, user interface mockups, and other technical aspects of your platform's design.
2. Development Documentation: This would contain the documentation for the APIs and the backend infrastructure.
3. Progress Reports/Work Log: Documentation containing the weekly progress of the project.
4. Code Repository Documentation: The complete GitHub Code of the project along with Read Me files describing the code.
5. Final Report: At the end of the project, a comprehensive final report summarizes the entire project, including goals achieved, challenges overcome, and lessons learned.

5.3 Credit Justification: 4 Credits

The project, "PawsConnect: A LinkedIn for dogs," is a project aimed at creating an inclusive online community for both pet owners and pet professionals. Its primary goal is to establish an inclusive online community that brings together pet owners and pet professionals, fostering connections, job opportunities, and event hosting, all with a central focus on enhancing the well-being and happiness of pets. The project spans from the initial research and surveys to inform system design, right through to the deployment phase. It encompasses a broad spectrum of computer science skills, including full-stack development, software architecture, and data management. Furthermore, it delves into areas such as social networking theory, user experience design, and ethical considerations.

To bring this project to fruition, I will need to gain proficiency in various technologies, including React, MongoDB, NodeJs, and ExpressJs. The development process will involve researching and implementing load balancing and caching systems to ensure the reliability of the application. Additionally, UI design will play a pivotal role in creating an engaging and user-friendly platform.

The allocation of 4 credits is justified given the complexity and interdisciplinary nature of the project. Moreover, it signifies the substantial potential for real-world impact. This project not only aligns with the learning of the graduate program but also equips me with valuable skills for future roles in software development, system architecture, and project management. Furthermore, it fosters a sense of community among pet enthusiasts, aligning with the project's overarching goal of promoting pet well-being and happiness.