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February 15, 2024

James Kirk

Chief Executive Officer

Fine Canine Cuisine Management Team

10050 County Road 77

Marion, AR 72301

Subject: Proposal for Machine Learning Solution for Dog Breed Classification

Dear James,

I am pleased to submit the proposal for the implementation of a machine learning solution using a convolutional neural network to classify 20,000 images of dogs by breed. As a Junior Software Engineer at Fine Canine Cuisine, I have undertaken a thorough analysis of the current challenges in the classification process and have developed this comprehensive proposal to address and enhance our capabilities.

**Objective:** The primary objective of this proposed machine learning solution is to streamline and optimize the dog breed classification process, providing Fine Canine Cuisine with a more efficient and accurate method for multiclass categorization a substantial dataset of 20,000 dog images.

**Methodology:** The proposal outlines the use of a convolutional neural network, a state-of-the-art technology in image classification. This advanced approach aims to significantly reduce the time and resources traditionally required for manual classification, ensuring accuracy and consistency in identifying dog breeds. For this endeavor we will utilize SEMMA methodology.

**Benefits:** The implementation of this machine learning solution is anticipated to bring about numerous benefits, including:

* **Increased Efficiency:** Rapid and accurate classification of a large dataset.
* **Cost Savings:** Minimization of labor hours and potential human errors associated with manual sorting.
* **Competitive Edge:** Adoption of cutting-edge technology, positioning Fine Canine Cuisine as an industry leader in pet nutrition.

**Estimated Cost:**

|  |  |  |
| --- | --- | --- |
| **Resource** | **Description** | **Cost** |
| Project Manager  Labor x 20 hours | Administration and Project Management duties | $2,000 |
| ML Engineer  Labor x 40 hours | Develops, trains, tests, and tunes image categorization AI | $4,000 |
| Cloud Hosting | Secure cloud storage for all data  (will utilize existing cloud hosting and storage solutions) | $0 |
| Front End Development  Labor x 10 hours | Develops User Interface | $600 |
| Back End Development Labor x 20 hours | Develops back-end logic and architecture | $1,200 |
| Quality Assurance x 20 hours | Testing and verification. | $1,000 |
| Hardware | Additional costs for required hardware, hardware upgrades, GPUs, CPUs, storage, etc. | $0 |
| Software – ML Frameworks and Libraries, Dev tools, Database Software, Operating systems | Project will use open source libraries and existing tools, software, and OS. | $0 |
| Legal | IP Rights, Compliance | $5,000 |
| Miscellaneous | Office supplies, IT supplies, etc. | $1,000 |
| Post Implementation | Maintenance, support, monitoring, updates | $2,000 |
| Contingency | Buffer | $3,000 |
|  | **Total** | $19,800 |

**Timeline:**

**The projected timeline is an estimate. Actual dates may vary.**

**Start date: Description:**

March 1, 2024 The proposal is accepted and the project charter is established.

March 8, 2024 Proof of concept is presented.

March 11, 2024 Project Initiation.

March 13, 2024 Development begins.

April 1, 2024 User testing begins.

April 22, 2024 Deployment begins.

May 3, 2024 Finalized Reporting and Project Summary delivered.

**Data:** The data used to train the model is available as a public dataset on Kaggle.com. There are no costs or limitations associated with using this dataset for development.

**Ethics:** In accordance with FCC policies, all employees must adhere to strict guidelines for handling sensitive data. Non-disclosure agreements (NDAs) are mandatory for external stakeholders. While the Kaggle dataset used is publicly accessible, all project data, including images, is treated as confidential. Our commitment to confidentiality ensures data security.

To mitigate risks:

a) Security and Theft:

* Implement robust security measures.
* Use encryption for data protection.

b) Loss of Data:

* Implement backup and recovery procedures.
* Conduct regular data integrity checks.

c) Corruption of Data:

* Institute measures for dataset integrity.
* Establish a protocol for addressing data corruption.

d) Internal Theft:

* Enforce access controls.
* Conduct periodic internal audits.

e) Non-compete Agreements:

* Require NDAs for external stakeholders.
* Clearly communicate terms and consequences.

These measures uphold our commitment to confidentiality, ensuring ethical data handling and compliance with industry standards.

Enclosed with this letter is the detailed proposal, which provides a comprehensive overview of the project scope, methodology, anticipated outcomes, and a projected timeline for implementation.

I trust that this proposal will be received with enthusiasm, and I am available at your convenience to discuss any aspects of the plan or address any questions you may have.

Thank you for considering this proposal. I look forward to the opportunity to contribute to the continued success of Fine Canine Cuisine through the implementation of this innovative machine learning solution.

Sincerely,

Steven Bennett

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