## Classifying Animal Images Using Vision Transformers

**Team:** Name 1, Name 2, Name 3. **Project Mentor TA:** TA Name

#### 1) Abstract

(1 paragraph, about 8-12 lines total, summarizing the entire report)

This would usually look like 2-3 lines of motivation (e.g. “For this project, we study the problem of …., which is important for ... .”), 2-4 lines stating main implementation and evaluation contributions, 2-4 lines stating the key results.

#### 2) Introduction

(about 0.75 pgs)

**Set up the problem:** In 1-2 paragraphs, describe the dataset you are/will be training and testing on, as well as what are the inputs and outputs of your eventual machine learning model.

**Implementation:** In one paragraph, summarize your implementation contributions.

**Evaluation:** In one paragraph, summarize your evaluation contributions.

Throughout the report, use mathematical notation to explain clearly as appropriate. You may find add-ons like “Auto-LaTeX Equations” (https://workspace.google.com/marketplace/app/autolatex\_equations/850293439076) useful, and you are of course welcome to use Google Docs’ native equation mode.

#### 2) How We Have Addressed Feedback From the Proposal Evaluations

#### Describe clearly the key feedback you received from the proposal and any other interactions with your project mentor etc., and how you have incorporated it into your project plans (aim for one paragraph, about 0.25 pages).

#### 3) Background

(Aim for 1-2 paragraphs, about 0.5 pages).

A brief tour of relevant work on this problem, focusing on project-relevant items, such as their shortcomings that you are aiming to address.

**At the end of this section, highlight the key prior works that you are building from, using the codebase of, etc.:** You may be able to reuse material from your midway report. E.g. “Among the above, the most relevant work to our project is:...”

1. Paper / blog post / Kaggle submission etc.: Title. URL. What it does that is relevant to this project (2-3 sentences). Code link. Provide any links in text, like [www.google.com](http://www.google.com), not like [Google](http://www.google.com).
2. More if needed. There should be at most 2 such closely related prior works in most cases.

#### 4) Summary of Our Contributions

(Aim for 0.5 pgs)

2-3 sentence introduction if necessary to set up the context for what follows. You may be able to reuse material from your proposal for this section.

1. **Implementation contribution(s): 2-3 sentences**
2. **Evaluation contributions: 2-3 sentences**

#### 5) Detailed Description of Contributions

(Aim for 2-3 pages)

Describe in detail your implementation and evaluation contributions, including:

* Details regarding the contributions
* Detailed results
* Any difficulties encountered

##### 5.1 Implementation Contributions

(Aim for 1-1.5 pages)

Describe your key implementation contributions:

* Option 1: If you are implementing and systematically comparing a wide variety of different approaches, describe them. Describe features you have implemented, neural network architectures you have considered, hyperparameters you have varied, etc.
* Option 2: If you are implementing a substantial novel approach for the target dataset, write out some high-level pseudocode, and discuss how your algorithm extends the prior work you have cited in Sec 2, and talk about how much progress you have made towards actually implementing and testing it, and any early results.

Be scholarly, and generously cite prior work, even aside from those in Section 3, if needed. Format them as [Author 1, 2020] or as [A].

##### 5.2 Evaluation Contribution

(Aim for 1-1.5 pgs)

What are the key questions your experiments are designed to answer, or hypotheses your experiments are designed to try and validate? If you went with Option 2 above, what are the baselines for your approach? What datasets and performance metrics? What are the distribution/dataset shifts you consider? When comparing different models for a particular task, determine the factors you think are responsible for a model to perform better than the others?. How does the nature of the problem and the available data influence your choice of models? Finally, what are the results, and how do they answer the questions you raised above? Include images, plots, tables etc.

#### 6) Compute/Other Resources Used

(3-4 lines describing what compute or other resources you used for executing this project)

#### 7) Conclusions

(about 0.5 pgs, ~2-3 paragraphs)

**Outcomes:** Highlight the main outcomes of this project. What did you learn from working on it? In your view, has the project produced something that others may find valuable?

**In Hindsight:** In hindsight, describe how the project idea evolved as you worked on it. (e.g. What roadblocks did you encounter? **Which parts of your original proposal plan were you unable to excute?**  How did previous rounds of feedback or interactions with the course staff or others shape the project?).

**(optional) For the Future:** What would you recommend as potential directions of improvement for someone looking to extend your work (maybe even yourself)?

**Ethical Considerations, and Broader Social and Environmental Impact:** If you make progress towards solving this problem, what potential impacts might it have? (This could also include any significant environmental impacts, e.g. from the compute needed to scale up your solution. You may be able to use parts of your discussion of ethical considerations and broader social impact from previous reports.)

**8) Roles of team members (1-2 sentences each):**

**Emma Miller:** Emma came up with the idea of using random forests on top of neural networks, and worked towards implementing this feature into our shared codebase.

**Ramesh Narayan:** Ramesh identified the main variations we investigated in our evaluation dataset. Due to health issues, he was unable to participate in our efforts after the last month.

Yi Chen: Yi researched and implemented our performance metrics and led our analysis of the failure modes of our approach, and the baselines.

#### (Exempted from page limit) Other Prior Work / References (apart from Sec 3) that are cited in the text:

1. Author 1, Author 2, Author 3, “Deep Learning for predicting cat moods as a function of TV watching”, SIGBOVIK 2020.

#### (Exempted from page limit) Attach your midway report here, as a series of screenshots from Gradescope, starting with a screenshot of your main evaluation tab, and then screenshots of each page, including pdf comments. This is similar to how you were required to attach screenshots of the proposal in your midway report.

#### (Exempted from page limit) Supplementary Materials if any (but not guaranteed to be considered during evaluation):