BMEN619 Wildfire Detection Evaluation Criteria

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# 1. Introduction

Wildfires are a major cause of concern as they increase methane emissions and cause issues.

Due to decreased predictability of wildfires, damages have increased. Efforts to improve the wildfire detection system have been made by various emergency services as it informs how to reduce the damage through early intervention [1]. This includes sensor networks, aerial monitoring, on-ground cameras and satellite images. Recent efforts to combine the methds with Artificial Intelligence Models have been made.

currently being explored is the use of deep learning models [2].

This assignment describes a proposed experimental design and an evaluation criterion for a wildfire detection model developed using the Sen2Fire dataset. This dataset consists of raster data from Sentinel 2 satellite which monitors **what?** and Sentinel 5P which has 2 bands of **what**. The ground-truth of the dataset will be the Moderate Resoluion Imaging Spectoradiometer (MODIS) Terra daily global fire provided by NASA

The goal is to train a classification model using supervised learning to detect if wildfire was detected in an area or not

What are the tools: DenseNet

How's Explainability

- Generalizability

- Reliability

How to make reproducible

Experimental Design

Description of task (supervised classification

Defines task detailing supervisedvs unsuper and typpe.

# 2. Data Loading and preprocessing

Dataset Input strategy

How missing data is handled

Multiple data types

Literature backed justification to preprocessing strategies

PreProcessing

Handling

Missing data/Normalization

.

# 3. Experimental Design

Considerations for reproducibility

How was data split, what’s theration

EXPERIMENTALDESIGN: Data Augmentation, data loader

# 4. Type-style and fonts

To achieve the best rendering both in the printed and digital proceedings, we strongly encourage you to use Times-Roman font. In addition, this will give the proceedings a more uniform look. Use a font that is no smaller than nine point type throughout the paper, including figure captions.

In nine point type font, capital letters are 2 mm high. If you use the smallest point size, there should be no more than 3.2 lines/cm (8 lines/inch) vertically. This is a minimum spacing; 2.75 lines/cm (7 lines/inch) will make the paper much more readable. Larger type sizes require correspondingly larger vertical spacing. Please do not double-space your paper. True-Type 1 fonts are preferred.

The first paragraph in each section should not be indented, but all following paragraphs within the section should be indented as these paragraphs demonstrate.

# 5. MAjor headings

Major headings, for example, “1. Introduction”, should appear in all capital letters, bold face if possible, centered in the column, with one blank line before, and one blank line after. Use a period (“.”) after the heading number, not a colon.

## 5.1. Subheadings

Subheadings should appear in lower case (initial word capitalized) in boldface.  They should start at the left margin on a separate line.

### 5.1.1. Sub-subheadings

Sub-subheadings, as in this paragraph, are discouraged. However, if you must use them, they should appear in lower case (initial word capitalized) and start at the left margin on a separate line, with paragraph text beginning on the following line.  They should be in italics.

# 6. Evaluation Criteria

Based on the nature of the task, the metrics of evaluation used to measure performance will be:

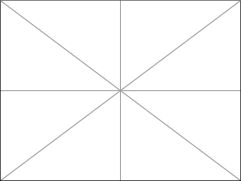
Task appropriate metrics of evaluation

Data characteristics and imbalance

Selection f Metrics (task, imbalance, characteristics).

# 8. Illustrations, graphs, and photographs

Illustrations must appear within the designated margins. They may span the two columns. If possible, position illustrations at the top of columns, rather than in the middle or at the bottom. Caption and number every illustration. All halftone illustrations must be clear black and white prints. If you use color, make sure that the color figures are clear when printed on a black-only printer.



**Fig. 1.** Example of placing a figure with experimental results.

# 14. References

[1] A.B. Smith, C.D. Jones, and E.F. Roberts, “Article Title,” *Journal*, vol. <volume>, no. <issue number>, pp. <page range>, Month Year.

[2] C.D. Jones, A.B. Smith, and E.F. Roberts, “Paper Title,” in *Proceedings Title*, Publisher, Location, Year, vol. <volume>, pp. <page range>.