

Automated Footwear Classification

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1. Problem Statement

The intent of footwear classification is to automate identification of footwear types from images, enabling efficient visual understanding for downstream applications. Footwear type classification from images is an important computer vision problem for applications in e-commerce, visual search, and product categorization. However, the task is challenging due to large visual variations of the same footwear categories, and diverse imaging conditions present.

The objective of this project is to evaluate the performance and scalability of various convolutional neural networks (CNN) architectures for footwear images classification across datasets of different complexity. We aim for the results to provide insights into the relationship between the dataset scale and model capacity, such as its strength and limitations of various CNNs when applied to the real-world footwear classification task.

2. Dataset Selection

Dataset	Class	Imag/Class	Resolution
name1	0	0	0
name2	0	0	0
name3	0	0	0

Table 1. insert text

3. Methodology

Our pipeline utilizes a transfer learning approach to handle the diverse resolutions and backgrounds of the aggregated data. All images will be standardized to 224 x 224 pixels and normalized. To prevent overfitting on smaller brand-specific sets, we will apply real-time data augmentation (flips, rotations, and brightness shifts). We will benchmark a custom baseline CNN against a pre-trained ResNet-50 architecture to leverage its residual learning capabilities for complex feature extraction. [To be changed]

4. Gantt Chart

Figure 1. Gantt Chart for Project Timeline

5. Bibliography

References