01_TwiBot_20_dimensionality

August 19, 2023

[1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import itertools
```

1 Dimension and compression vs model performance

1.1 TwiBot-20

[2]:
```
dataset_nam = "twibot"

y_test = pd.read_excel(f"./dimensionality_input/{dataset_nam}/results/ytest.
 ↪xlsx"
                       ).drop(columns=["Unnamed: 0", "index"], errors="ignore")

results = pd.read_csv(f"./dimensionality_input/{dataset_nam}/results/
 ↪results_aggregated.csv",
                            index_col = 0)
```

[3]:
```
# UMAP: only seed 0 for readability

a = results["embedding_type"].unique().tolist()
a.remove("graph_features")
a.remove("all_embeddings")
a

for model, metric, embedding_type, compression_name in list(
    itertools.product(results["model"].unique(),
                      #["acc", "f1", "mcc", "auc"],
                      ["f1"],
                      a,
                      results["compression_name"].unique())):

    if compression_name == "no_compression":
        pass
    else:
        print(f"------------- \n {model}, {metric}, {embedding_type},␣
 ↪{compression_name}")
```

```
        temp = results[results["compression_name"].isin(["no_compression",␣
↪compression_name])]
        temp = temp[(temp["embedding_type"] == embedding_type) & (temp["model"]␣
↪== model)]
        if compression_name == "umap":
            temp = temp[(temp["seed"] == 0) | (temp["seed"].isna())]

        temp2 = temp.sort_values(by="original_dim_number", ascending=True)

        fig, ax = plt.subplots(figsize=(12,8))
        plt.scatter(temp2["original_dim_number"], temp2[metric], label =␣
↪temp2["embedding_name"])
        plt.title(f"Metric: {metric} vs embedding dimension ({embedding_type},␣
↪{compression_name}, {model} model)")
        plt.xlabel("original dim number")
        plt.ylabel(metric)

        for index in range(len(temp2["original_dim_number"])):
            ax.text(temp2["original_dim_number"].iloc[index],
                    temp2[metric].iloc[index],
                    temp2["embedding_name"].iloc[index], size=10)
        plt.show()
```

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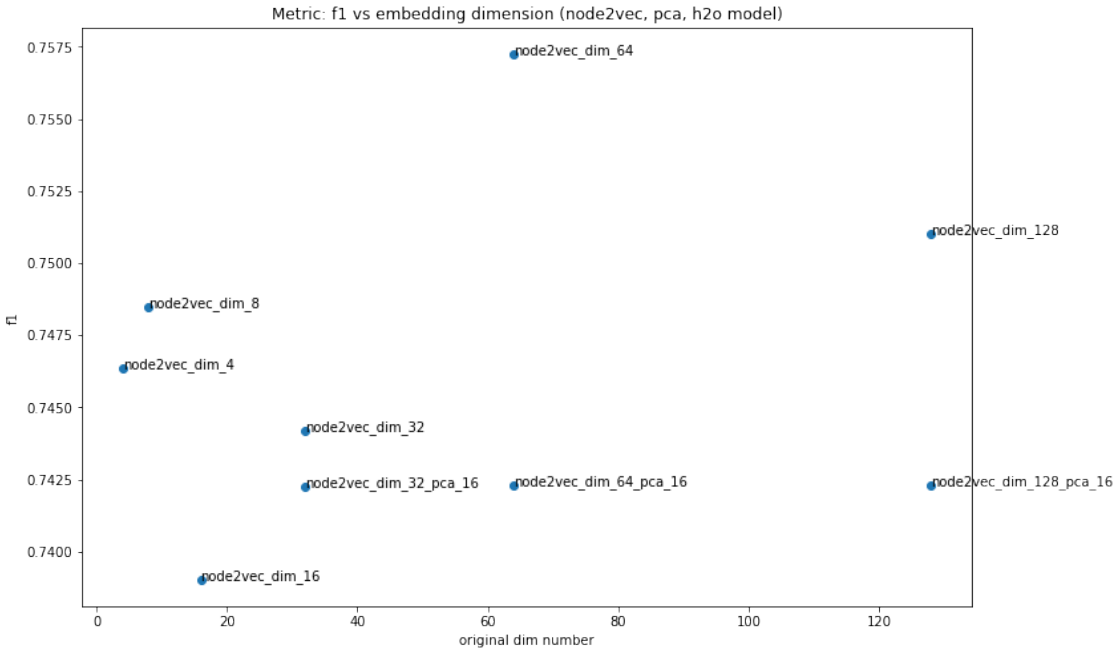
h2o, f1, node2vec, pca



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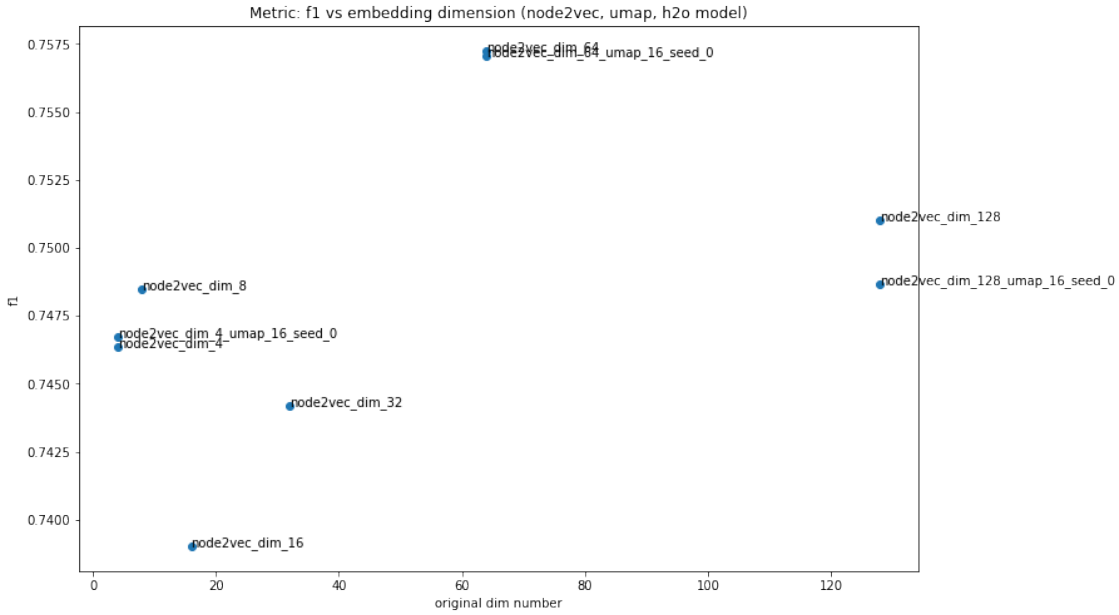

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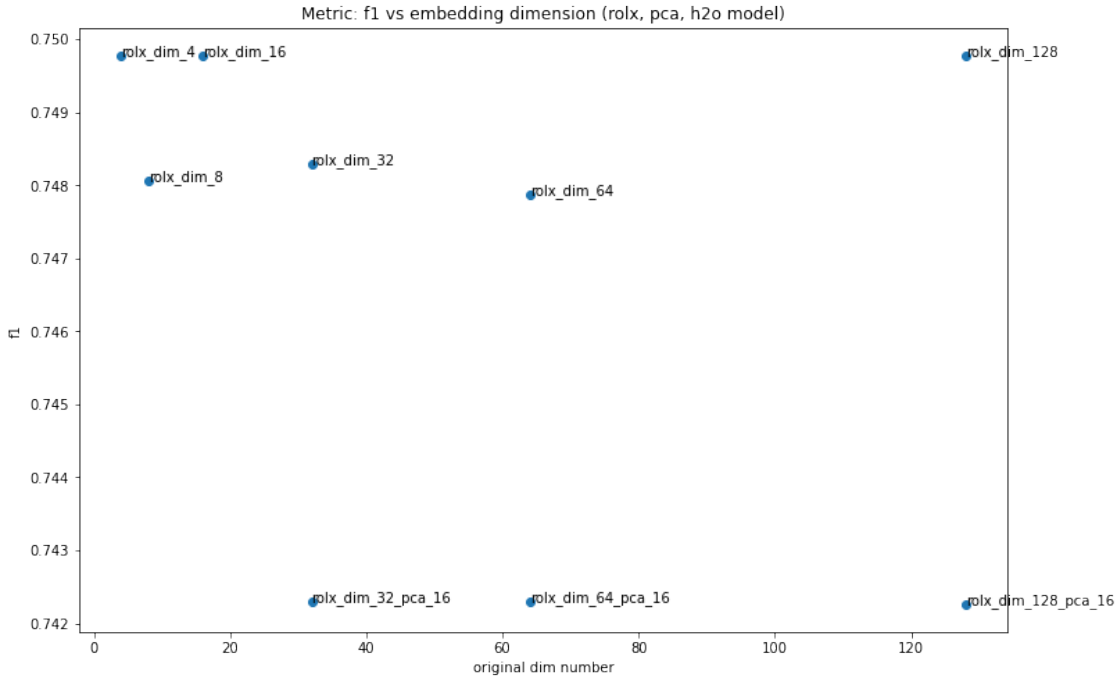
h2o, f1, rolx, pca



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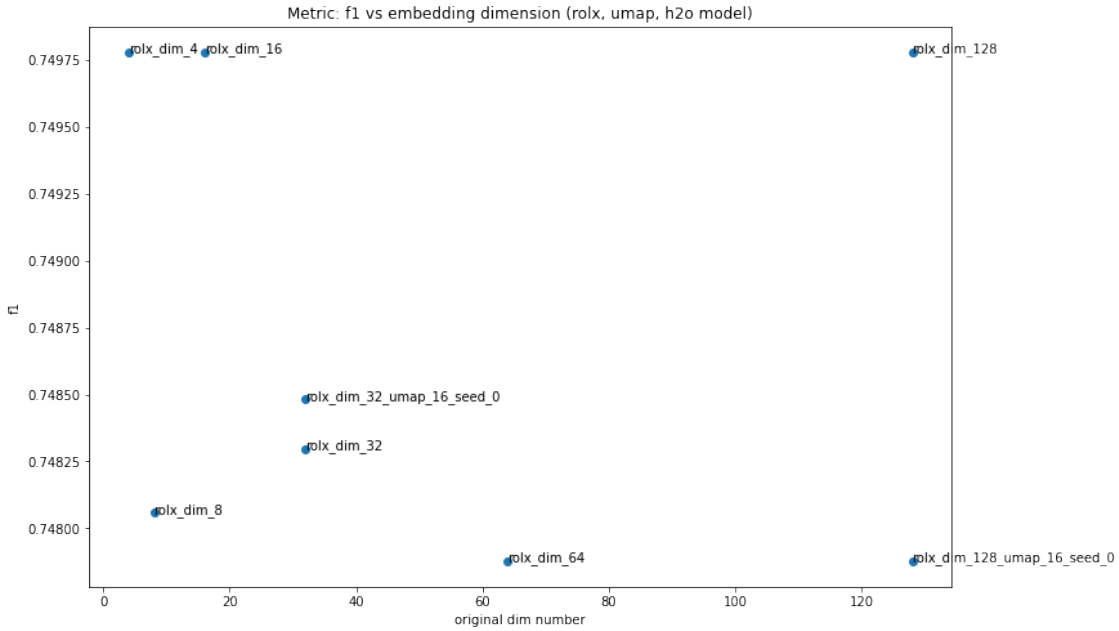

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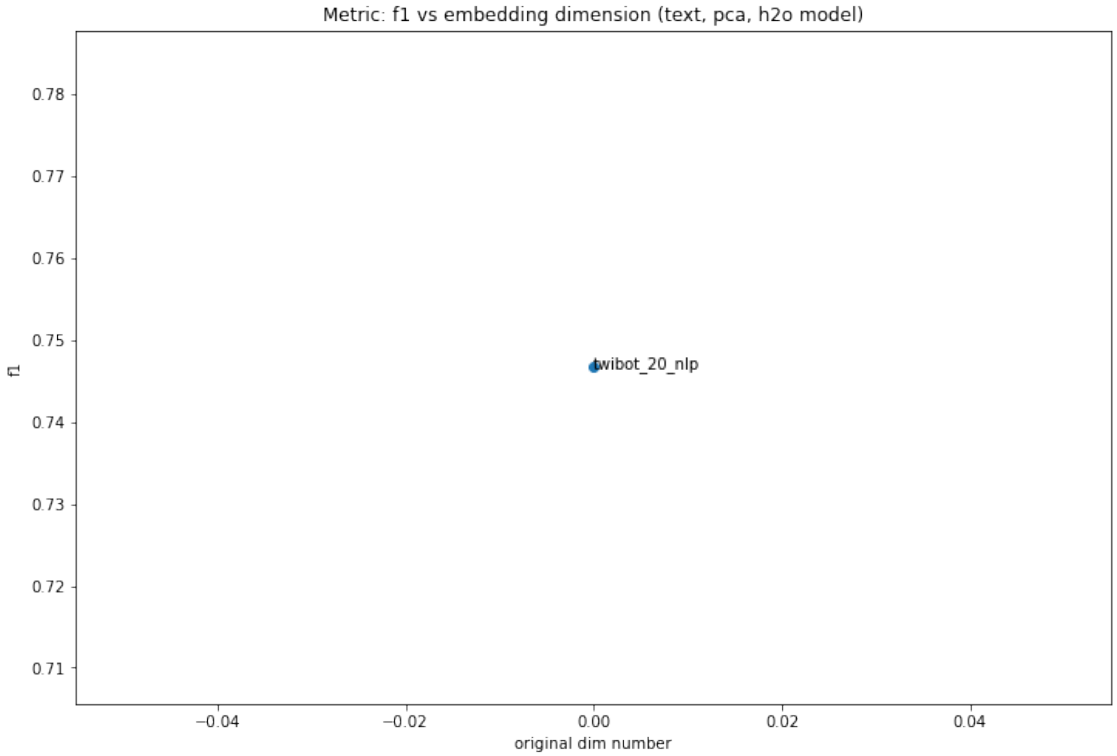
h2o, f1, text, pca



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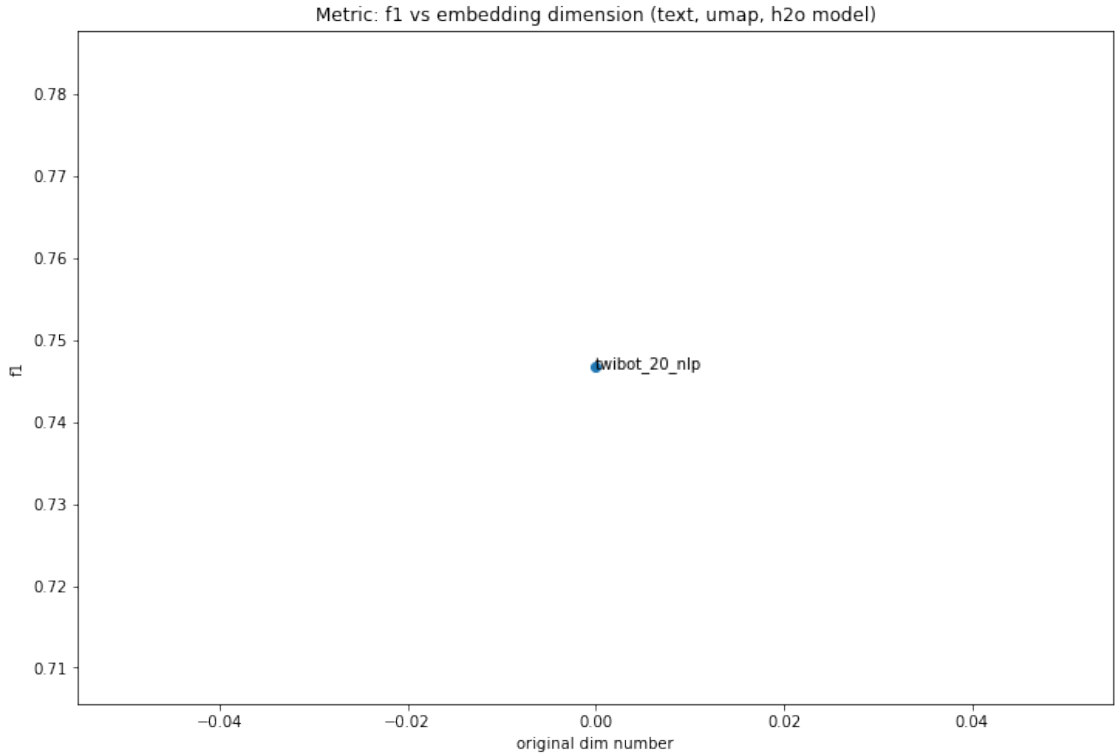
h2o, f1, text, umap



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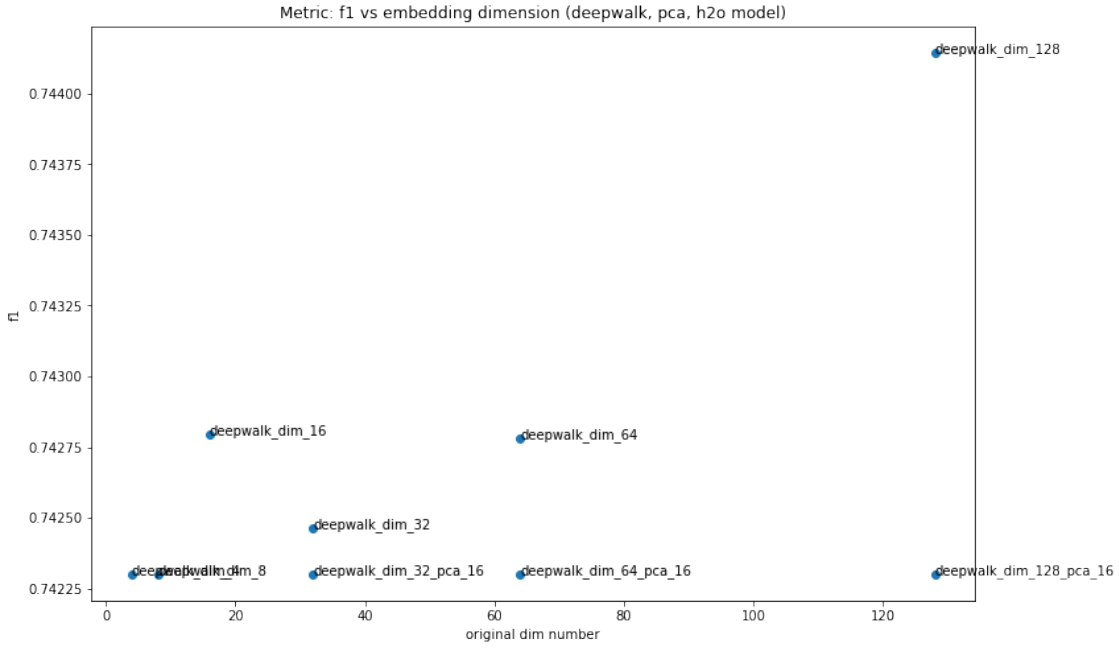
h2o, f1, deepwalk, pca



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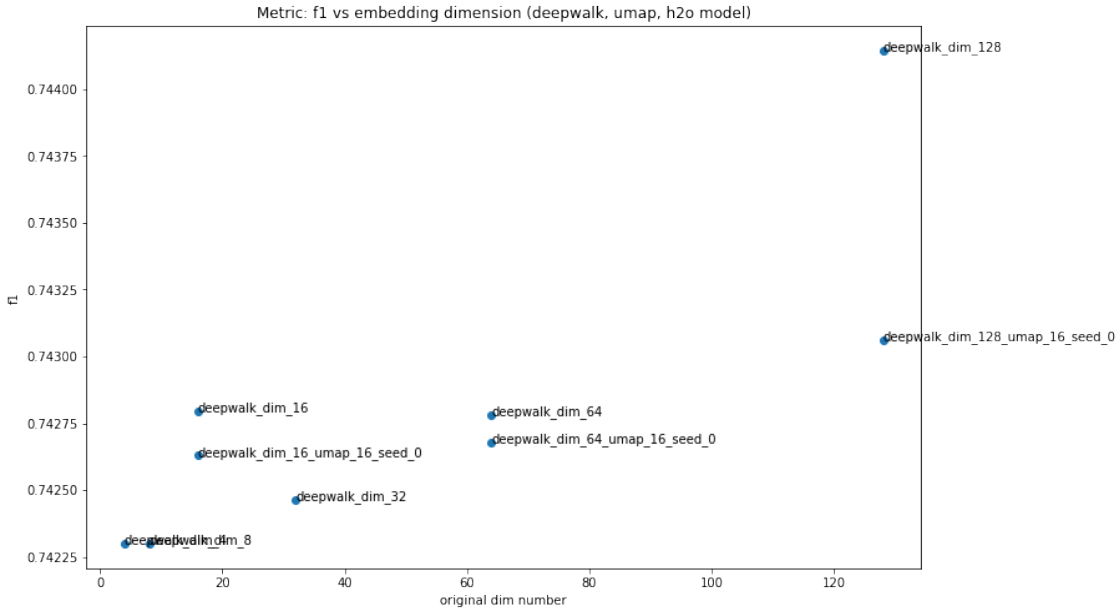
h2o, f1, deepwalk, umap



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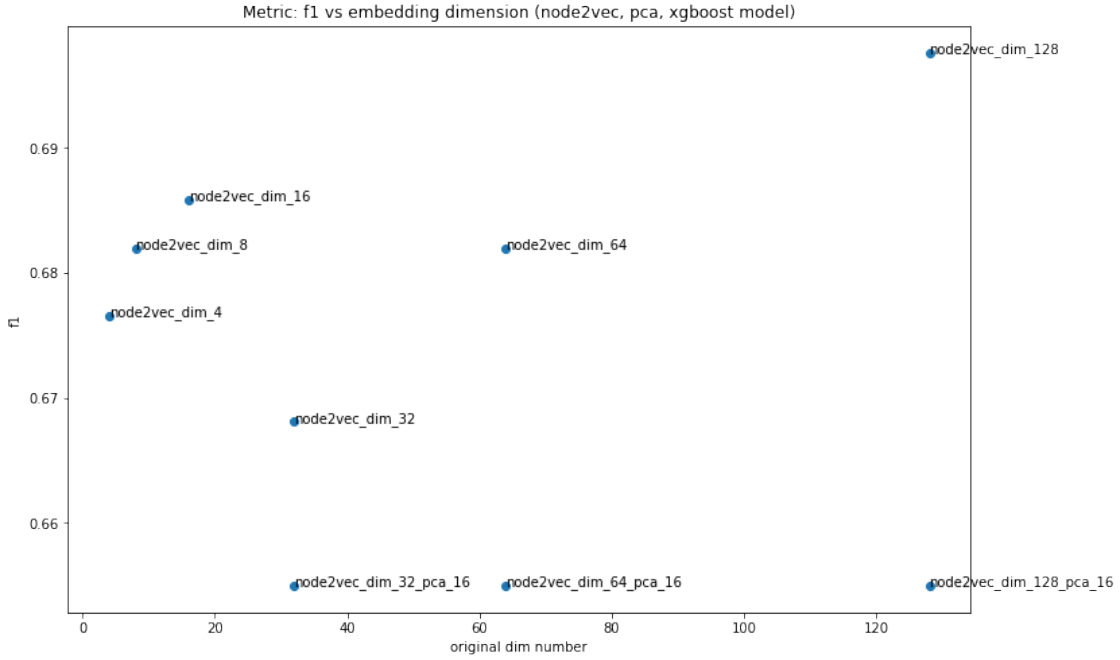
xgboost, f1, node2vec, pca



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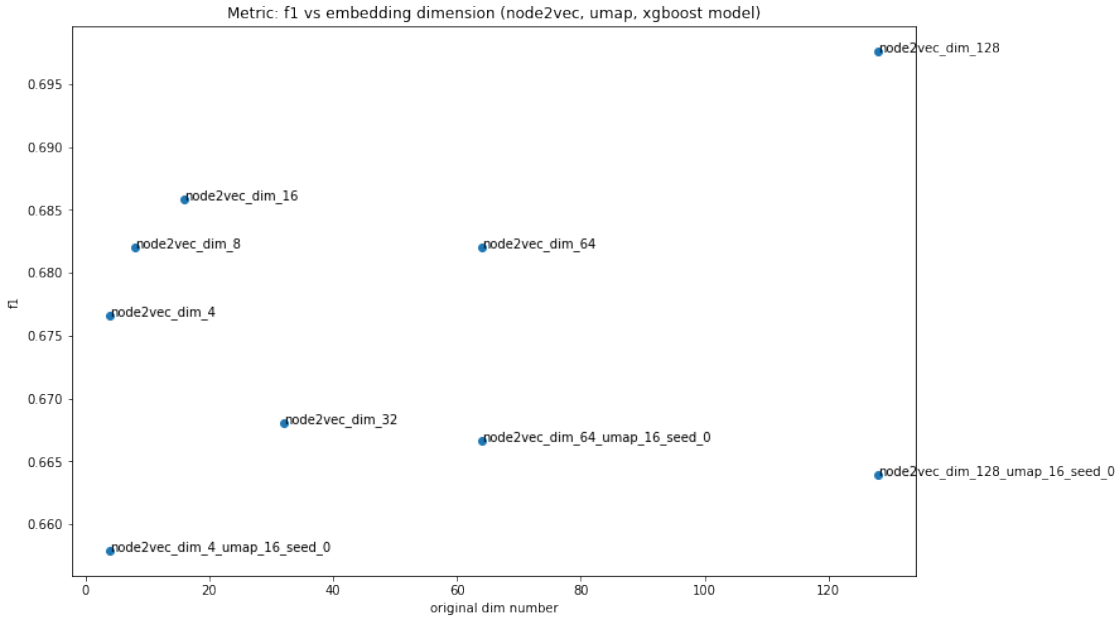
xgboost, f1, node2vec, umap



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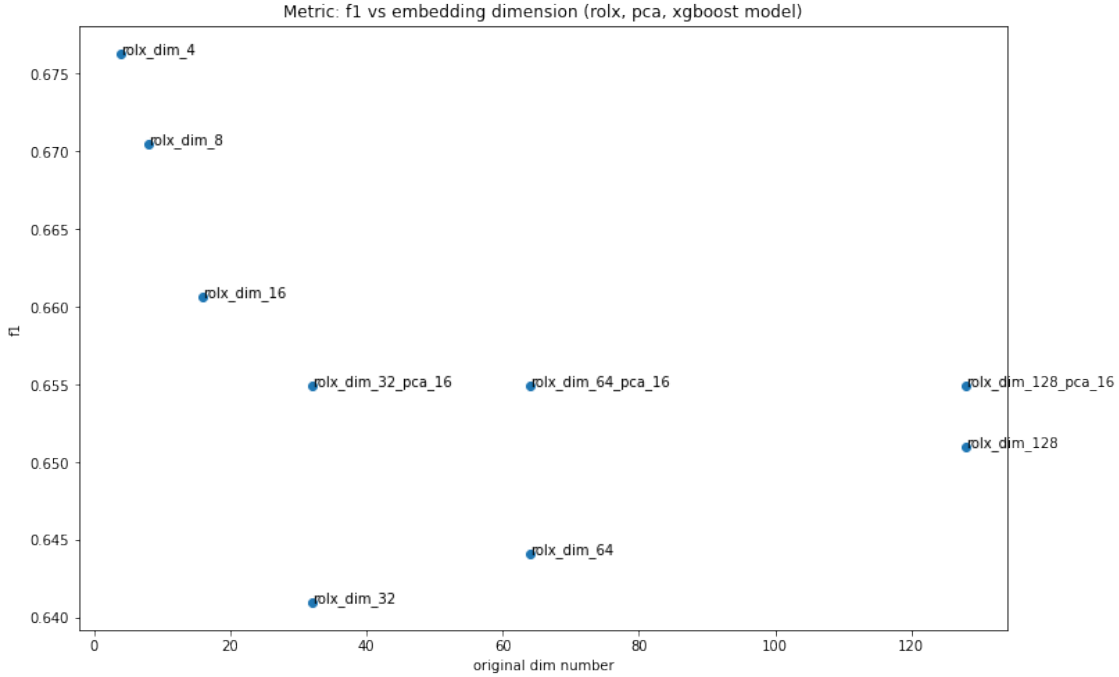

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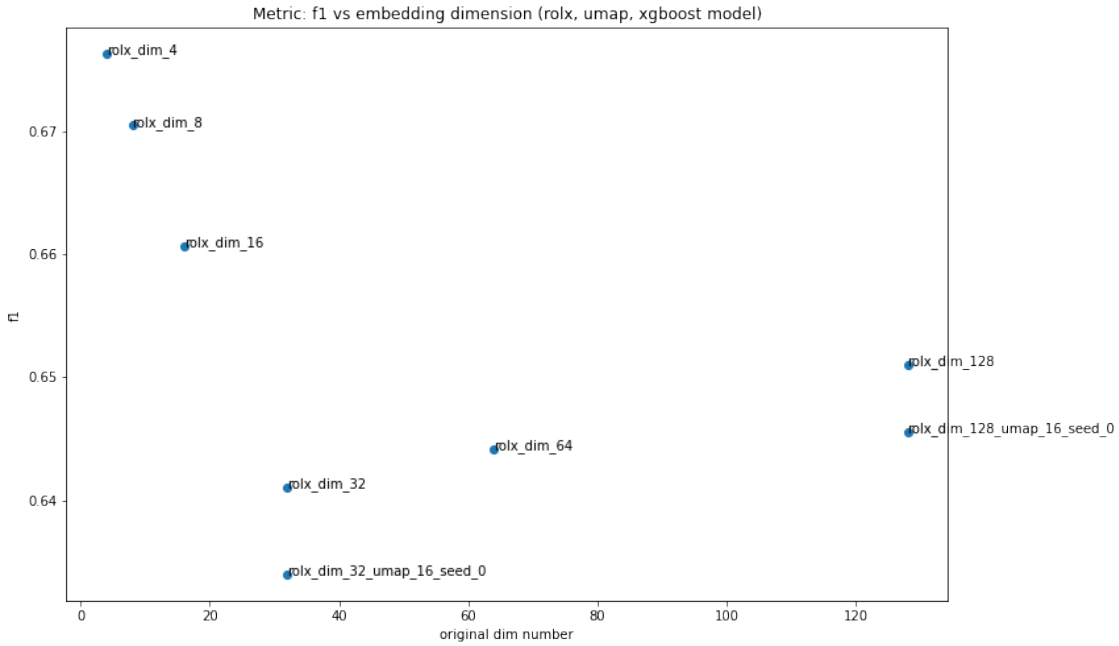

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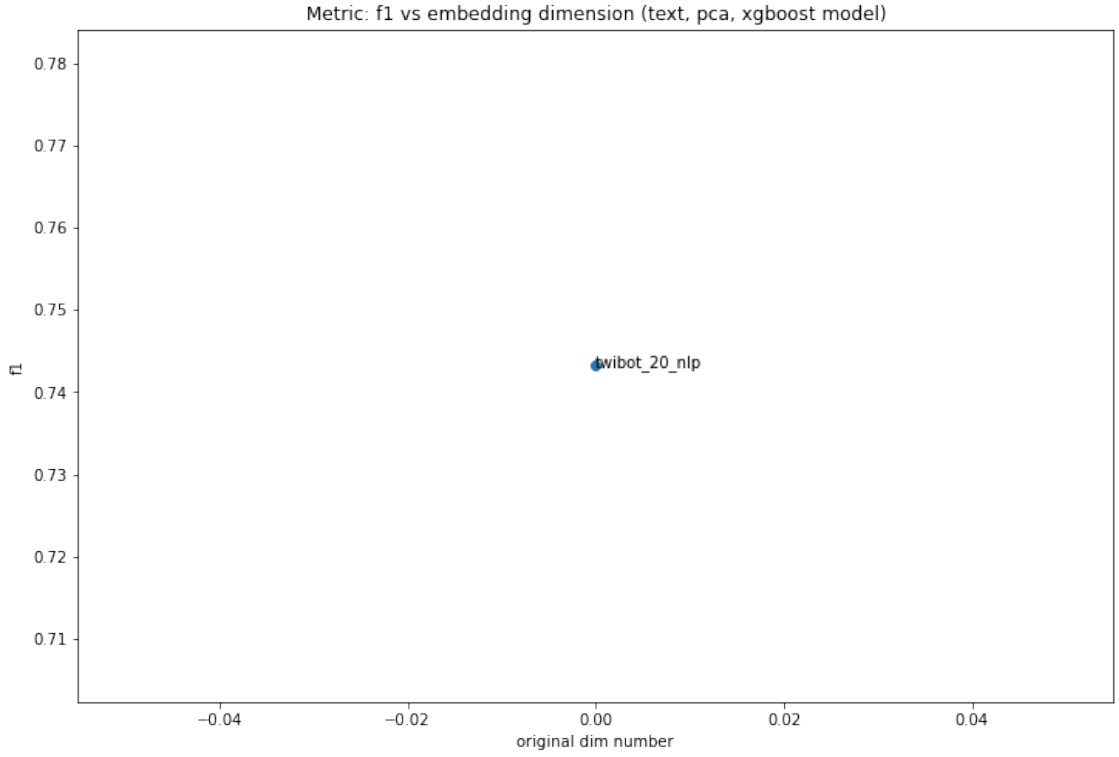

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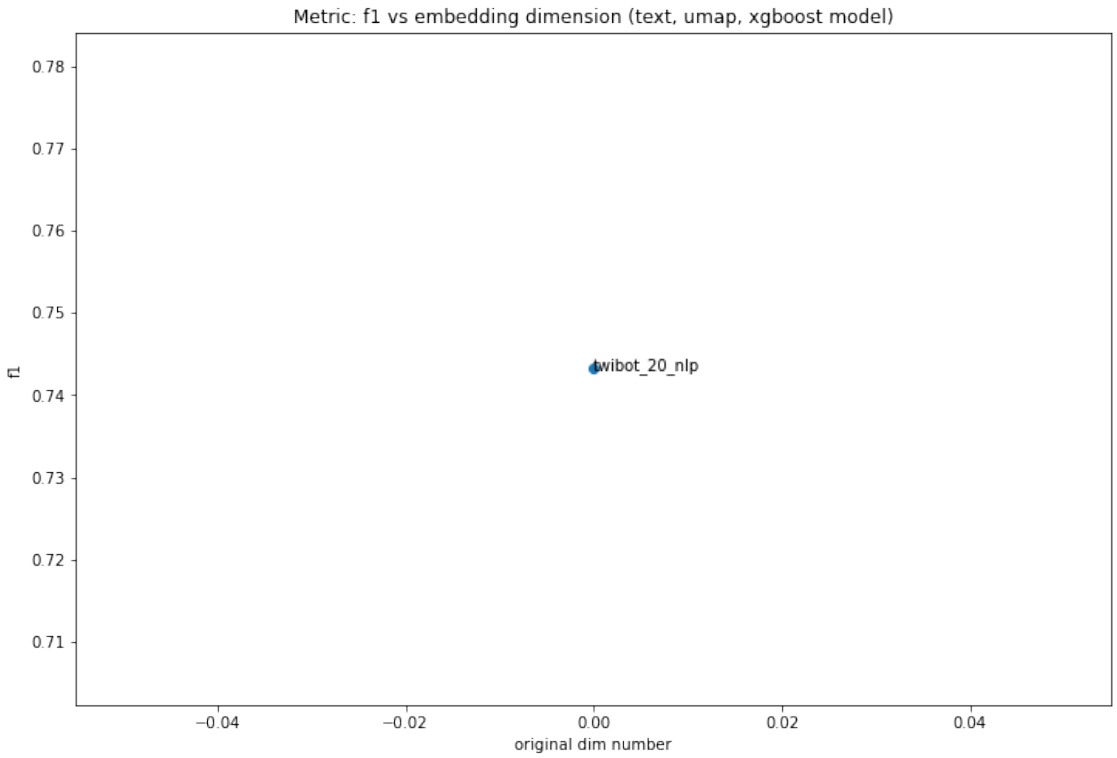

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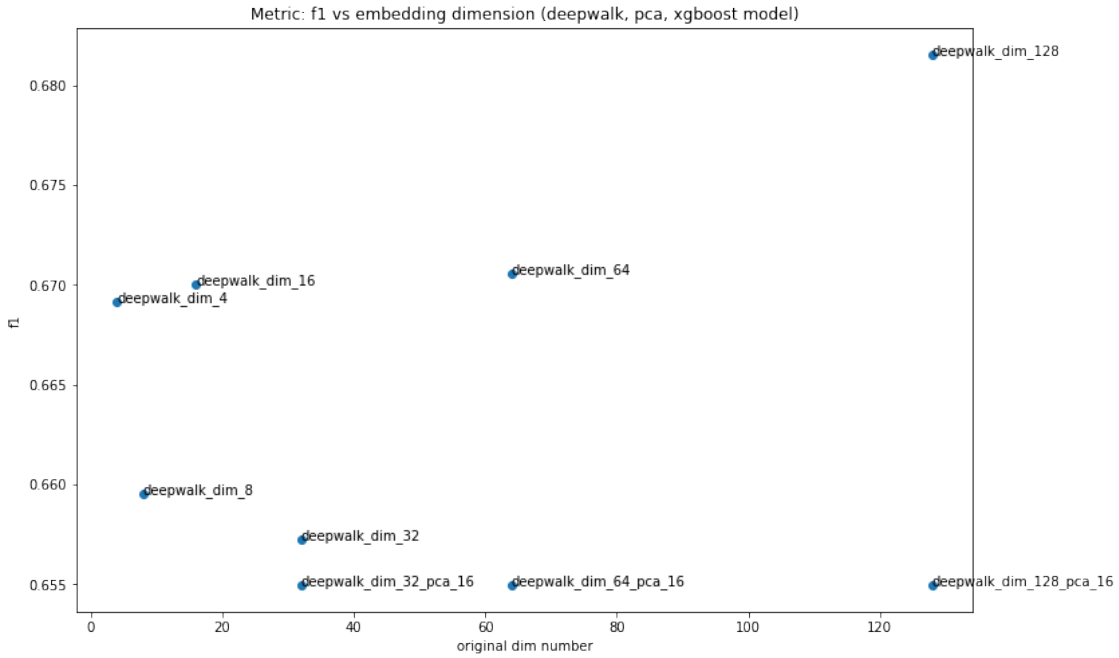

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xgboost, f1, deepwalk, umap