Results in tables

In [1]:
```
import pandas as pd
import os
from collections import defaultdict
import pandas as pd
import numpy as np
```

In [2]:
```
results_folder = "results"
model_types = ["cnn14_logstft", "cnn14_logmel"]
method_names = ["saliency", "gradcam", "lime", "shap"]
exp_types_mapping = {
    "cnn14_logstft": ["clean"],
    "cnn14_logmel": ["clean", "white", "room", "horse"]
}
folder_for_tables = "csvs"
```

In [3]:
```
csv_files = []
for model in model_types:
    for method in method_names:
        for exp in exp_types_mapping[model]:
            dir_path = os.path.join(results_folder,
                                    model,
                                    f"{method}_{exp}",
                                    folder_for_tables)
            if not os.path.isdir(dir_path):
                continue
            for fname in os.listdir(dir_path):
                if fname.endswith(".csv"):
                    csv_files.append(os.path.join(dir_path, fname))
```

In [4]:
```
experiment_results = {m: {} for m in model_types}
for fpath in csv_files:
    parts = fpath.split(os.sep)
    model_type = parts[parts.index(results_folder) + 1]
    method, exp = parts[parts.index(results_folder) + 2].split("_", 1)
    exp_name = f"{method}_{exp}"
    mask_name = os.path.splitext(parts[-1])[0]

    df = pd.read_csv(fpath)
    metrics = df.columns.difference(["sample", "is_correct"])
    means = df[metrics].mean()

    experiment_results[model_type].setdefault(exp_name, {})[mask_name] = means
```

In [5]:
```
for model, exps in experiment_results.items():
    for exp_name, mask_dict in exps.items():
        experiment_results[model][exp_name] = pd.DataFrame(mask_dict).T
```

In [6]:
```
experiment_results_true  = {m: {} for m in model_types}
experiment_results_false = {m: {} for m in model_types}

for fpath in csv_files:
    parts = fpath.split(os.sep)
    model_type  = parts[parts.index(results_folder) + 1]
    method, exp = parts[parts.index(results_folder) + 2].split("_", 1)
    exp_name = f"{method}_{exp}"
    mask_name = os.path.splitext(parts[-1])[0]

    df = pd.read_csv(fpath)
    metrics = df.columns.difference(["sample", "is_correct"])

    means_t = df[df["is_correct"] == True][metrics].mean()
    means_f = df[df["is_correct"] == False][metrics].mean()

    experiment_results_true[model_type].setdefault(exp_name, {})[mask_name]  = means_t
    experiment_results_false[model_type].setdefault(exp_name, {})[mask_name] = means_f

for m in model_types:
    for exp_name, mask_dict in experiment_results_true[m].items():
        experiment_results_true[m][exp_name] = pd.DataFrame(mask_dict).T
    for exp_name, mask_dict in experiment_results_false[m].items():
        experiment_results_false[m][exp_name] = pd.DataFrame(mask_dict).T
```

In [7]:
```
mask_experiment_results = {m: {} for m in model_types}
for fpath in csv_files:
    parts = fpath.split(os.sep)
    model_type = parts[parts.index(results_folder) + 1]
    method, exp = parts[parts.index(results_folder) + 2].split("_", 1)
    mask_name = os.path.splitext(parts[-1])[0]
```

```
    df = pd.read_csv(fpath)
    metrics = df.columns.difference(["sample", "is_correct"])
    means = df[metrics].mean()

    mask_experiment_results[model_type]\
      .setdefault(exp, {})\
      .setdefault(mask_name, {})[method] = means

for model, exps in mask_experiment_results.items():
    for exp_type, masks in exps.items():
        for mask_name, methods_dict in masks.items():
            mask_experiment_results[model][exp_type][mask_name] = \
                pd.DataFrame(methods_dict).T
```

In [8]:
```
column_order = ["FF", "AI", "AG", "FidIn", "SPS", "AD", "COMP"]
invert_metrics = {"AD", "COMP"}
diff_color_cols = {"SPS", "COMP"}
```

In [9]:
```
def highlight_extremes(col: pd.Series):
    is_invert = col.name in invert_metrics
    use_blue  = col.name in diff_color_cols
    mx, mn    = col.max(), col.min()
    styles    = []
    for v in col:
        if use_blue:
            if is_invert:
                if v == mn: styles.append("background-color: lightblue; font-weight: bold")
                elif v == mx: styles.append("background-color: lightsteelblue; font-weight: bold")
                else: styles.append("")
            else:
                if v == mx: styles.append("background-color: lightblue; font-weight: bold")
                elif v == mn: styles.append("background-color: lightsteelblue; font-weight: bold")
                else: styles.append("")
        else:
            if is_invert:
                if v == mn: styles.append("background-color: lightgreen; font-weight: bold")
                elif v == mx: styles.append("background-color: lightcoral; font-weight: bold")
                else: styles.append("")
            else:
                if v == mx: styles.append("background-color: lightgreen; font-weight: bold")
                elif v == mn: styles.append("background-color: lightcoral; font-weight: bold")
                else: styles.append("")
    return styles
```

In [10]:
```
def display_experiment_results(results):
    def _show(df, title=None):
        df = df.reindex(columns=[c for c in column_order if c in df.columns])
        styled = df.style.apply(highlight_extremes, axis=0)
        if title:
            print(f"\n--- {title} ---")
        display(styled)

    if isinstance(results, pd.DataFrame):
        _show(results)
        return

    if all(isinstance(v, pd.DataFrame) for v in results.values()):
        for name, df in results.items():
            _show(df, title=name)
        return

    for model, exps in results.items():
        print(f"\n===== MODEL: {model} =====")
        for name, df in exps.items():
            _show(df, title=name)
```

In [11]:
```
def display_summary_table(df, title=None, drop_best_mask_col=True):
    method_order = ["saliency", "gradcam", "lime", "shap"]

    if "method" in df.columns:
        df = df.set_index("method")

    if "best_mask" in df.columns:
        df.index = [f"{m}_{bm}" for m, bm in zip(df.index, df["best_mask"])]
        if drop_best_mask_col:
            df = df.drop(columns=["best_mask"])

    ordered_idx = []
    for m in method_order:
        ordered_idx.extend([idx for idx in df.index if idx.split("_", 1)[0] == m])
    ordered_idx = [idx for idx in ordered_idx if idx in df.index]
    if ordered_idx:
        df = df.loc[ordered_idx]
```

```
    df = df.reindex(columns=[c for c in column_order if c in df.columns])

    styled = df.style.apply(highlight_extremes, axis=0)

    if title:
        print(f"\n=== {title} ===")
    display(styled)
```

Mel model - clean

In [12]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["saliency_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.923509	**17.000000**	0.010820	0.660000	0.173750	**34.228729**	3.364614
topK_30_pos	0.924342	**0.000000**	**0.000000**	**0.015000**	0.700006	**98.380550**	9.171495
minmax_pos	0.765816	0.250000	0.049572	0.087500	0.789568	94.036667	9.025774
topK_5_pos	0.760572	**0.000000**	**0.000000**	0.022500	0.949973	97.641902	7.380256
pos_thresh_50	0.034041	0.250000	0.173731	0.017500	**0.998818**	97.718493	3.126737
topK_50	**0.925488**	**0.000000**	**0.000000**	0.020000	0.500000	98.354752	9.682342
pos_thresh_25	0.266565	0.500000	0.321346	0.025000	0.990407	97.161012	5.499278
bin	0.925405	**0.000000**	**0.000000**	0.020000	0.501437	98.364178	9.679418
minmax	0.865400	3.750000	**3.145995**	0.270000	0.038238	77.512300	10.372001
topK_5	0.760572	**0.000000**	**0.000000**	0.022500	0.949973	97.641902	7.380256
topK_30	0.924342	**0.000000**	**0.000000**	**0.015000**	0.700006	**98.380550**	9.171495
sigmoid	0.494250	3.500000	1.586628	**0.705000**	0.000435	38.663598	10.375488
sigmoid_pos	0.459911	2.500000	1.171660	0.677500	**0.000218**	41.395925	**10.375489**
pos_thresh_75	**0.004156**	**0.000000**	**0.000000**	0.030000	0.998694	97.389923	**1.330769**

In [13]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["gradcam_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.620931	11.750000	0.986515	0.652500	0.376861	38.971917	7.311441
topK_30_pos	0.362777	8.000000	0.610826	0.445000	0.594143	60.972215	7.798626
minmax_pos	0.431486	0.750000	0.675307	0.362500	0.396158	70.565552	9.305825
topK_5_pos	0.079183	3.250000	0.000789	0.140000	0.889483	88.374592	6.940699
pos_thresh_50	0.366132	4.250000	1.610246	0.462500	0.539787	60.367838	8.580185
topK_50	0.525585	4.500000	2.390889	0.547500	0.499100	50.501074	9.684130
pos_thresh_25	0.599464	12.250000	**2.903764**	0.685000	0.347608	37.228447	7.528186
bin	**0.718901**	**19.500000**	2.312055	**0.782500**	0.195505	**24.363625**	**4.918478**
minmax	0.513961	1.250000	0.771900	0.392500	0.335331	66.672894	10.150634
topK_5	**0.030628**	**0.000000**	**0.000000**	**0.095000**	**0.948803**	**93.808333**	7.403008
topK_30	0.273394	2.250000	0.820703	0.352500	0.698777	71.267326	9.175542
sigmoid	0.503142	2.000000	0.972570	0.677500	0.026291	41.579207	**10.373997**
sigmoid_pos	0.509011	2.750000	1.287992	0.672500	**0.021327**	41.113377	9.803656
pos_thresh_75	0.158799	0.250000	0.219627	0.220000	0.782398	83.862255	7.872705

In [14]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["lime_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.827086	13.500000	5.598555	0.750000	0.461311	30.218063	9.410670
topK_30_pos	0.623726	10.000000	4.870080	0.542500	0.674179	49.493281	9.251675
minmax_pos	0.757147	4.000000	1.739817	0.437500	0.547565	60.697763	9.736422
topK_5_pos	**0.159315**	**2.000000**	1.222972	**0.305000**	**0.913795**	**72.973278**	**7.872777**
pos_thresh_50	0.486153	3.000000	1.786661	0.472500	0.748973	57.984101	8.786603
topK_50	0.825345	13.750000	6.322732	0.740000	0.476548	31.117691	9.727269
pos_thresh_25	0.802991	9.750000	4.796789	0.700000	0.561653	35.022268	9.408597
bin	**0.899183**	**28.750000**	**12.359402**	**0.932500**	0.200351	**8.067020**	9.534232
minmax	0.788818	4.750000	2.500606	0.482500	0.392213	56.327209	10.072025
topK_5	**0.159315**	**2.000000**	1.222972	**0.305000**	**0.913795**	**72.973278**	**7.872777**
topK_30	0.623726	10.000000	4.870080	0.542500	0.674179	49.493281	9.251675
sigmoid	0.497470	**2.000000**	**0.954793**	0.677500	0.014309	42.379379	10.374871
sigmoid_pos	0.496602	**2.000000**	0.963045	0.675000	**0.013037**	42.468471	**10.374927**
pos_thresh_75	0.238406	3.250000	1.655848	0.350000	0.861821	68.189178	8.186731

In [15]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["shap_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.927128**	**0.000000**	**0.000000**	0.017500	0.500000	**98.489136**	9.682342
topK_30_pos	0.920323	**0.000000**	**0.000000**	**0.015000**	0.700006	98.376693	9.171495
minmax_pos	0.742941	**0.000000**	**0.000000**	0.017500	0.730384	98.140806	9.325663
topK_5_pos	0.644693	**0.000000**	**0.000000**	0.027500	0.949973	97.529152	7.380256
pos_thresh_50	0.059368	0.250000	0.190206	0.025000	0.996374	97.753463	4.424030
topK_50	**0.927128**	**0.000000**	**0.000000**	0.017500	0.500000	**98.489136**	9.682342
pos_thresh_25	0.514186	**0.000000**	**0.000000**	0.020000	0.955756	97.999591	7.109132
bin	0.927023	**0.000000**	**0.000000**	**0.015000**	0.488779	98.448432	9.704492
minmax	0.896360	**0.000000**	**0.000000**	0.080000	0.069193	93.939058	10.366691
topK_5	0.644693	**0.000000**	**0.000000**	0.027500	0.949973	97.529152	7.380256
topK_30	0.920323	**0.000000**	**0.000000**	**0.015000**	0.700006	98.376693	9.171495
sigmoid	0.411541	1.750000	0.706020	**0.635000**	0.001600	45.859315	10.375483
sigmoid_pos	0.413540	**2.000000**	**0.717767**	0.632500	**0.000816**	**45.765673**	**10.375487**
pos_thresh_75	**0.000941**	**0.000000**	**0.000000**	0.027500	**0.998980**	97.767977	**1.983555**

STFT model - clean

In [16]:
```
display_experiment_results(experiment_results["cnn14_logstft"]["saliency_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.804243**	**21.250000**	0.005357	**0.515000**	0.246247	**48.376074**	5.221556
topK_30_pos	0.775971	1.000000	0.695137	0.030000	0.699991	96.617813	10.091335
minmax_pos	0.793905	1.250000	0.374701	0.045000	0.783134	94.492255	9.997833
topK_5_pos	0.617889	0.750000	0.579243	0.030000	0.949986	96.632662	8.299783
pos_thresh_50	0.031167	0.500000	0.253879	0.030000	**0.999009**	96.453913	3.677172
topK_50	0.791540	0.500000	0.431110	0.027500	0.499994	96.391078	10.602145
pos_thresh_25	0.219041	1.250000	0.177886	0.040000	0.991120	95.720335	6.327378
bin	0.791281	0.500000	0.430915	0.027500	0.500274	96.420557	10.601551
minmax	0.788165	10.000000	**6.286535**	0.342500	0.038138	66.196693	11.292008
topK_5	0.617889	0.750000	0.579243	0.030000	0.949986	96.632662	8.299783
topK_30	0.775971	1.000000	0.695137	0.030000	0.699991	96.617813	10.091335
sigmoid	0.643469	2.500000	0.838001	0.202500	0.000142	79.326670	**11.295279**
sigmoid_pos	0.641400	2.000000	0.750599	0.197500	**0.000071**	79.565167	11.295279
pos_thresh_75	**0.006663**	**0.000000**	**0.000000**	**0.010000**	0.997741	**97.268040**	**1.625156**

In [17]:
```
display_experiment_results(experiment_results["cnn14_logstft"]["gradcam_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.724579**	**24.750000**	0.217910	**0.702500**	0.224974	**31.075000**	**4.771012**
topK_30_pos	0.572529	16.250000	0.219069	0.517500	0.442721	50.726126	6.382848
minmax_pos	0.320230	0.500000	0.087757	0.100000	0.610100	90.744003	9.346533
topK_5_pos	0.191031	6.250000	0.071148	0.157500	0.835978	84.384347	7.304013
pos_thresh_50	0.266586	0.250000	0.207937	0.117500	0.762384	89.263126	8.492369
topK_50	0.585838	4.000000	**1.152864**	0.437500	0.499938	59.861858	10.602257
pos_thresh_25	0.398511	2.250000	0.973528	0.267500	0.600928	73.924376	9.142811
bin	0.474595	7.500000	1.070762	0.497500	0.451437	54.120088	8.475080
minmax	0.567456	1.750000	0.520995	0.262500	0.295466	75.694391	11.139094
topK_5	0.114764	0.250000	0.070154	**0.040000**	**0.949974**	**95.877295**	8.300039
topK_30	0.425481	1.500000	0.694756	0.272500	0.699953	76.859205	10.091461
sigmoid	0.634957	1.750000	0.747174	0.190000	0.014194	80.017202	**11.294890**
sigmoid_pos	0.645253	2.250000	0.778206	0.205000	**0.007431**	79.146000	10.504438
pos_thresh_75	**0.101793**	**0.000000**	**0.000000**	0.050000	0.879805	95.176441	7.329255

In [18]:
```
display_experiment_results(experiment_results["cnn14_logstft"]["lime_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.765314	16.750000	8.681377	0.452500	0.472411	55.331106	10.164076
topK_30_pos	0.694155	10.000000	5.252163	0.337500	0.691593	67.192280	10.118696
minmax_pos	0.633585	1.000000	0.381902	0.180000	0.621340	84.303404	10.527688
topK_5_pos	0.250140	0.750000	0.135246	0.135000	0.936524	89.718892	8.527748
pos_thresh_50	0.431767	0.750000	0.356323	0.182500	0.868335	84.286786	9.100906
topK_50	0.764448	15.500000	9.093660	0.427500	0.493322	57.746470	10.615335
pos_thresh_25	0.676561	5.750000	2.650058	0.335000	0.697021	68.592485	9.986101
bin	**0.790285**	**26.000000**	**14.205455**	**0.685000**	0.272667	**32.028679**	10.931619
minmax	0.685044	3.000000	1.561553	0.237500	0.311617	77.522342	11.105058
topK_5	0.250140	0.750000	0.135246	0.135000	0.936524	89.718892	8.527748
topK_30	0.694155	10.000000	5.252163	0.337500	0.691593	67.192280	10.118696
sigmoid	0.647775	2.500000	0.875570	0.217500	0.007533	78.297433	11.295110
sigmoid_pos	0.648529	2.500000	0.878564	0.222500	**0.006348**	78.271001	**11.295134**
pos_thresh_75	**0.213145**	**0.250000**	**0.078971**	**0.122500**	**0.943129**	**90.821143**	**8.265318**

In [19]:
```
display_experiment_results(experiment_results["cnn14_logstft"]["shap_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.802137**	**3.750000**	0.377866	0.117500	0.448744	88.001432	9.515425
topK_30_pos	0.763906	0.500000	0.387102	0.027500	0.699991	97.378508	10.091335
minmax_pos	0.455331	0.250000	0.026532	0.020000	0.733023	96.696681	10.238195
topK_5_pos	0.444995	0.250000	0.030072	0.017500	0.949986	96.534742	8.299783
pos_thresh_50	0.042832	0.750000	0.169498	**0.010000**	0.997583	97.548774	4.935396
topK_50	0.797198	0.500000	0.377006	0.020000	0.499994	97.530510	10.602145
pos_thresh_25	0.325835	**0.000000**	**0.000000**	0.020000	0.963614	97.014994	7.850671
bin	0.796341	0.500000	0.376295	0.020000	0.491457	97.488113	10.618963
minmax	0.758164	1.250000	0.592583	0.085000	0.072735	92.499200	11.285742
topK_5	0.444995	0.250000	0.030072	0.017500	0.949986	96.534742	8.299783
topK_30	0.763906	0.500000	0.387102	0.027500	0.699991	97.378508	10.091335
sigmoid	0.638561	2.000000	0.676899	0.190000	0.000569	79.908981	11.295279
sigmoid_pos	0.638853	2.000000	**0.679504**	**0.192500**	**0.000291**	**79.869016**	**11.295279**
pos_thresh_75	**0.000926**	0.250000	0.015382	0.012500	**0.998292**	**97.660085**	**2.156133**

Mel model clean - correct

In [20]:
```
display_experiment_results(experiment_results_true["cnn14_logmel"]["saliency_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.945407	**17.073171**	0.011396	0.680217	0.163957	**32.330323**	3.174969
topK_30_pos	0.945672	**0.000000**	**0.000000**	**0.016260**	0.700006	**98.377567**	9.171495
minmax_pos	0.779311	**0.000000**	**0.000000**	0.092141	0.788313	94.163711	9.036151
topK_5_pos	0.772949	**0.000000**	**0.000000**	0.024390	0.949973	97.640883	7.380256
pos_thresh_50	0.029163	0.271003	0.188326	0.018970	**0.998817**	97.861775	3.133157
topK_50	**0.946665**	**0.000000**	**0.000000**	0.021680	0.500000	98.339428	9.682342
pos_thresh_25	0.259918	0.271003	0.169656	0.021680	0.990384	97.379375	5.511346
bin	0.946579	**0.000000**	**0.000000**	0.021680	0.501572	98.350047	9.679155
minmax	0.882767	4.065041	**3.410292**	0.279133	0.038666	76.540316	10.371953
topK_5	0.772949	**0.000000**	**0.000000**	0.024390	0.949973	97.640883	7.380256
topK_30	0.945672	**0.000000**	**0.000000**	**0.016260**	0.700006	**98.377567**	9.171495
sigmoid	0.487210	3.252033	1.559783	**0.731707**	0.000438	36.225326	10.375488
sigmoid_pos	0.451754	2.710027	1.270092	0.710027	**0.000220**	38.730136	**10.375489**
pos_thresh_75	**0.005135**	**0.000000**	**0.000000**	0.032520	0.998687	97.610025	**1.324031**

In [21]:
```
display_experiment_results(experiment_results_true["cnn14_logmel"]["gradcam_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.630246	10.569106	0.885289	0.666667	0.384207	38.209700	7.453223
topK_30_pos	0.362149	7.046070	0.438331	0.447154	0.604240	61.349777	7.931774
minmax_pos	0.442164	0.542005	0.497571	0.379404	0.389012	69.407910	9.366113
topK_5_pos	0.077364	2.710027	0.000678	0.138211	0.892246	88.718802	6.961431
pos_thresh_50	0.376808	4.065041	1.477375	0.479675	0.535387	58.944749	8.656051
topK_50	0.534547	4.336043	2.269330	0.577236	0.499126	48.482414	9.684078
pos_thresh_25	0.619630	12.466125	**2.900091**	0.712737	0.339949	35.056717	7.534071
bin	**0.743637**	**19.241192**	2.057722	**0.802168**	0.185910	**22.318007**	**4.848208**
minmax	0.523824	1.084011	0.568076	0.411924	0.336639	65.374030	10.149080
topK_5	**0.028273**	**0.000000**	**0.000000**	**0.094851**	**0.948832**	**93.922137**	7.402466
topK_30	0.275450	2.168022	0.666223	0.371274	0.698775	70.113108	9.175550
sigmoid	0.501385	2.168022	1.054277	0.712737	0.027383	38.411951	**10.373904**
sigmoid_pos	0.507619	2.981030	1.396197	0.712737	**0.022402**	37.906985	9.839989
pos_thresh_75	0.162608	0.271003	0.238079	0.227642	0.782878	83.316661	7.925729

In [22]:
```
display_experiment_results(experiment_results_true["cnn14_logmel"]["lime_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.847274	13.279133	5.791467	0.769648	0.463530	28.938404	9.463903
topK_30_pos	0.632108	9.485095	4.781647	0.555556	0.673927	48.656539	9.252500
minmax_pos	0.772356	3.794038	1.600055	0.460705	0.543287	59.272476	9.750867
topK_5_pos	**0.145929**	**1.355014**	**0.881449**	**0.311653**	**0.912932**	**72.477098**	**7.881742**
pos_thresh_50	0.492048	2.710027	1.588524	0.490515	0.744019	56.764825	8.818588
topK_50	0.845376	13.821138	6.459969	0.764228	0.476298	29.388786	9.727778
pos_thresh_25	0.819008	9.485095	4.675122	0.731707	0.555752	32.783006	9.432027
bin	**0.920931**	**28.726287**	**12.686897**	**0.953930**	0.195358	**6.189071**	9.547627
minmax	0.805307	4.607046	2.325402	0.504065	0.394354	54.714965	10.071379
topK_5	**0.145929**	**1.355014**	**0.881449**	**0.311653**	**0.912932**	**72.477098**	**7.881742**
topK_30	0.632108	9.485095	4.781647	0.555556	0.673927	48.656539	9.252500
sigmoid	0.493142	2.168022	1.035006	0.704607	0.014497	39.768185	10.374856
sigmoid_pos	0.492211	2.168022	1.043951	0.701897	**0.013297**	39.867365	**10.374910**
pos_thresh_75	0.230053	2.710027	1.442576	0.363144	0.858715	67.244040	8.211671

In [23]:
```
display_experiment_results(experiment_results_true["cnn14_logmel"]["shap_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.948405**	**0.000000**	**0.000000**	0.018970	0.500000	**98.487189**	9.682342
topK_30_pos	0.942526	**0.000000**	**0.000000**	**0.016260**	0.700006	98.375260	9.171495
minmax_pos	0.756791	**0.000000**	**0.000000**	0.018970	0.730700	98.266224	9.324414
topK_5_pos	0.660258	**0.000000**	**0.000000**	0.027100	0.949973	97.559801	7.380256
pos_thresh_50	0.056379	**0.000000**	**0.000000**	0.021680	0.996380	97.994332	4.427683
topK_50	**0.948405**	**0.000000**	**0.000000**	0.018970	0.500000	**98.487189**	9.682342
pos_thresh_25	0.524006	**0.000000**	**0.000000**	0.018970	0.955952	98.076177	7.102215
bin	0.948274	**0.000000**	**0.000000**	**0.016260**	0.488946	98.450221	9.704169
minmax	0.916186	**0.000000**	**0.000000**	0.084011	0.069038	93.863099	10.366718
topK_5	0.660258	**0.000000**	**0.000000**	0.027100	0.949973	97.559801	7.380256
topK_30	0.942526	**0.000000**	**0.000000**	**0.016260**	0.700006	98.375260	9.171495
sigmoid	0.402466	1.897019	0.765333	**0.672087**	0.001581	43.059117	10.375483
sigmoid_pos	0.404587	**2.168022**	**0.778068**	0.669377	**0.000807**	**42.974514**	**10.375487**
pos_thresh_75	**0.001608**	**0.000000**	**0.000000**	0.024390	**0.998985**	98.047735	**1.986147**

Mel model clean - incorrect

In [24]:
```
display_experiment_results(experiment_results_false["cnn14_logmel"]["saliency_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.662846	**16.129032**	0.003964	**0.419355**	0.290323	**56.825893**	5.622005
topK_30_pos	0.670454	**0.000000**	**0.000000**	**0.000000**	0.700006	98.416065	9.171495
minmax_pos	0.605179	3.225806	0.639638	0.032258	0.804512	92.524422	8.902249
topK_5_pos	0.613254	**0.000000**	**0.000000**	**0.000000**	0.949973	97.654032	7.380256
pos_thresh_50	0.092098	**0.000000**	**0.000000**	**0.000000**	**0.998837**	96.012966	3.050318
topK_50	**0.673416**	**0.000000**	**0.000000**	**0.000000**	0.500000	**98.537152**	9.682342
pos_thresh_25	0.345686	3.225806	**2.126949**	0.064516	0.990689	94.561785	5.355628
bin	0.673358	**0.000000**	**0.000000**	**0.000000**	0.499835	98.532379	9.682547
minmax	0.658679	**0.000000**	**0.000000**	0.161290	0.033137	89.082037	10.372571
topK_5	0.613254	**0.000000**	**0.000000**	**0.000000**	0.949973	97.654032	7.380256
topK_30	0.670454	**0.000000**	**0.000000**	**0.000000**	0.700006	98.416065	9.171495
sigmoid	0.578050	6.451613	1.906163	0.387097	0.000389	67.686891	10.375488
sigmoid_pos	0.557008	**0.000000**	**0.000000**	0.290323	**0.000195**	73.127409	**10.375489**
pos_thresh_75	**-0.007497**	**0.000000**	**0.000000**	**0.000000**	0.998781	94.770001	**1.410973**

In [25]:
```
display_experiment_results(experiment_results_false["cnn14_logmel"]["gradcam_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.510053	**25.806452**	2.191429	0.483871	0.289428	**48.044750**	**5.623778**
topK_30_pos	0.370261	19.354839	2.664075	0.419355	0.473962	56.478008	6.213730
minmax_pos	0.304390	3.225806	2.790927	0.161290	0.481220	84.345221	8.588200
topK_5_pos	0.100836	9.677419	0.002109	0.161290	0.856589	84.277379	6.693920
pos_thresh_50	0.239048	6.451613	3.191839	0.258065	0.592162	77.307186	7.677133
topK_50	0.418908	6.451613	3.837831	0.193548	0.498788	74.529634	9.684749
pos_thresh_25	0.359428	9.677419	2.947487	0.354839	0.438772	63.079039	7.458135
bin	0.424467	22.580645	**5.339440**	**0.548387**	0.309716	48.713074	5.754914
minmax	0.396560	3.225806	3.198057	0.161290	0.319760	82.133567	10.169128
topK_5	**0.058653**	**0.000000**	**0.000000**	**0.096774**	**0.948455**	**92.453693**	7.409452
topK_30	0.248931	3.225806	2.659505	0.129032	0.698807	85.006246	9.175436
sigmoid	0.524053	**0.000000**	**0.000000**	0.258065	0.013287	79.279771	**10.375098**
sigmoid_pos	**0.525585**	**0.000000**	**0.000000**	0.193548	**0.008527**	79.279782	9.371171
pos_thresh_75	0.113465	**0.000000**	**0.000000**	0.129032	0.776680	90.356591	7.241546

In [26]:
```
display_experiment_results(experiment_results_false["cnn14_logmel"]["lime_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.586783	16.129032	3.302271	0.516129	0.434898	45.450130	8.777023
topK_30_pos	0.523954	16.129032	5.922719	0.387097	0.677181	59.453209	9.241862
minmax_pos	0.576111	6.451613	3.403436	**0.161290**	0.598479	77.663271	9.564484
topK_5_pos	**0.318655**	9.677419	5.288197	0.225806	**0.924064**	78.879420	**7.766068**
pos_thresh_50	0.415989	6.451613	4.145134	0.258065	0.807937	72.497425	8.405885
topK_50	0.586913	12.903226	4.689164	0.451613	0.479526	51.697237	9.721214
pos_thresh_25	0.612332	12.903226	6.245024	0.322581	0.631892	61.676711	9.129704
bin	**0.640306**	**29.032258**	**8.461155**	**0.677419**	0.259775	**30.420668**	9.374790
minmax	0.592543	6.451613	4.586105	0.225806	0.366728	75.518108	10.079711
topK_5	**0.318655**	9.677419	5.288197	0.225806	**0.924064**	78.879420	**7.766068**
topK_30	0.523954	16.129032	5.922719	0.387097	0.677181	59.453209	9.241862
sigmoid	0.548984	**0.000000**	**0.000000**	0.354839	0.012076	73.461004	10.375050
sigmoid_pos	0.548869	**0.000000**	**0.000000**	0.354839	**0.009937**	73.430027	**10.375136**
pos_thresh_75	0.337834	9.677419	4.194467	0.193548	0.898795	**79.439362**	7.889867

In [27]:
```
display_experiment_results(experiment_results_false["cnn14_logmel"]["shap_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.673863	**0.000000**	**0.000000**	**0.000000**	0.500000	**98.512308**	9.682342
topK_30_pos	0.656046	**0.000000**	**0.000000**	**0.000000**	0.700006	98.393752	9.171495
minmax_pos	0.578087	**0.000000**	**0.000000**	**0.000000**	0.726615	96.647926	9.340534
topK_5_pos	0.459420	**0.000000**	**0.000000**	0.032258	0.949973	97.164324	7.380256
pos_thresh_50	0.094950	**3.225806**	**2.454268**	0.064516	0.996303	94.886344	4.380559
topK_50	0.673863	**0.000000**	**0.000000**	**0.000000**	0.500000	**98.512308**	9.682342
pos_thresh_25	0.397294	**0.000000**	**0.000000**	0.032258	0.953419	97.087980	7.191464
bin	**0.674068**	**0.000000**	**0.000000**	**0.000000**	0.486790	98.427143	9.708335
minmax	0.660365	**0.000000**	**0.000000**	0.032258	0.071041	94.843223	10.366376
topK_5	0.459420	**0.000000**	**0.000000**	0.032258	0.949973	97.164324	7.380256
topK_30	0.656046	**0.000000**	**0.000000**	**0.000000**	0.700006	98.393752	9.171495
sigmoid	0.519564	**0.000000**	**0.000000**	**0.193548**	0.001829	79.190700	10.375480
sigmoid_pos	0.520112	**0.000000**	**0.000000**	**0.193548**	**0.000934**	**78.989477**	**10.375486**
pos_thresh_75	**-0.007000**	**0.000000**	**0.000000**	0.064516	**0.998926**	94.437956	**1.952701**

STFT model clean - correct

In [28]:
```
display_experiment_results(experiment_results_true["cnn14_logstft"]["saliency_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.866403**	**21.153846**	0.006039	**0.519231**	0.245189	**47.934814**	5.199129
topK_30_pos	0.838052	0.320513	0.019933	0.028846	0.699991	96.769077	10.091335
minmax_pos	0.851453	0.320513	0.038429	0.035256	0.781555	95.605697	10.009087
topK_5_pos	0.647590	**0.000000**	**0.000000**	0.028846	0.949986	96.805100	8.299783
pos_thresh_50	0.024769	0.320513	0.133165	0.028846	**0.999013**	96.935649	3.706453
topK_50	0.853016	**0.000000**	**0.000000**	0.028846	0.499994	96.267474	10.602145
pos_thresh_25	0.206891	0.641026	0.037393	0.044872	0.991009	95.848175	6.354969
bin	0.852802	**0.000000**	**0.000000**	0.028846	0.500330	96.315157	10.601439
minmax	0.848827	8.333333	**5.478854**	0.371795	0.038374	65.418301	11.291996
topK_5	0.647590	**0.000000**	**0.000000**	0.028846	0.949986	96.805100	8.299783
topK_30	0.838052	0.320513	0.019933	0.028846	0.699991	96.769077	10.091335
sigmoid	0.678723	1.923077	0.405414	0.237179	0.000143	77.095965	**11.295279**
sigmoid_pos	0.676650	1.282051	0.318633	0.230769	**0.000071**	77.316344	11.295279
pos_thresh_75	**0.005165**	**0.000000**	**0.000000**	**0.009615**	0.997864	**97.744719**	**1.667829**

In [29]:
```
display_experiment_results(experiment_results_true["cnn14_logstft"]["gradcam_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.777619**	**21.794872**	0.227320	**0.698718**	0.237156	**31.810478**	**5.029264**
topK_30_pos	0.594974	14.102564	0.279717	0.519231	0.464397	51.586828	6.695281
minmax_pos	0.337215	**0.000000**	**0.000000**	0.108974	0.618437	90.448146	9.652682
topK_5_pos	0.171583	4.166667	0.090463	0.121795	0.873857	88.453087	7.634905
pos_thresh_50	0.281354	0.320513	0.266586	0.128205	0.777310	88.980275	8.772010
topK_50	0.621108	3.205128	**1.185983**	0.490385	0.499945	56.917732	10.602242
pos_thresh_25	0.427502	2.243590	0.786154	0.314103	0.609550	71.119038	9.441787
bin	0.510466	7.051282	1.019737	0.560897	0.452052	49.886688	8.809827
minmax	0.596427	0.961538	0.059732	0.307692	0.302410	73.605895	11.132301
topK_5	0.112911	0.320513	0.089942	**0.041667**	**0.949976**	**96.201768**	8.299985
topK_30	0.438422	0.961538	0.497975	0.314103	0.699965	74.869156	10.091422
sigmoid	0.669639	0.961538	0.350558	0.221154	0.015088	77.747138	**11.294846**
sigmoid_pos	0.681245	1.602564	0.399060	0.240385	**0.008155**	76.818237	10.752045
pos_thresh_75	**0.098735**	**0.000000**	**0.000000**	0.060897	0.900679	95.351209	7.564960

In [30]:
```
display_experiment_results(experiment_results_true["cnn14_logstft"]["lime_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.819873	16.025641	8.791465	0.487179	0.477505	52.765375	10.275113
topK_30_pos	0.736013	9.935897	5.330596	0.378205	0.691351	64.301468	10.119489
minmax_pos	0.663173	0.320513	0.161831	0.195513	0.618076	82.921527	10.539677
topK_5_pos	0.240962	0.320513	0.047541	0.153846	0.936539	89.954697	8.527599
pos_thresh_50	0.439892	0.641026	0.345008	0.211538	0.865942	82.839096	9.122823
topK_50	0.819409	14.743590	8.993968	0.471154	0.493327	54.287029	10.615327
pos_thresh_25	0.718068	6.410256	2.899278	0.391026	0.694511	64.846598	9.999663
bin	**0.852587**	**26.282051**	**14.748848**	**0.740385**	0.263340	**27.300729**	10.937771
minmax	0.723457	1.923077	0.862809	0.269231	0.323994	75.558178	11.092808
topK_5	0.240962	0.320513	0.047541	0.153846	0.936539	89.954697	8.527599
topK_30	0.736013	9.935897	5.330596	0.378205	0.691351	64.301468	10.119489
sigmoid	0.683565	1.923077	0.589405	0.256410	0.008007	75.868932	11.295089
sigmoid_pos	0.684526	1.923077	0.588550	0.259615	**0.006876**	75.819090	**11.295114**
pos_thresh_75	**0.209489**	**0.000000**	**0.000000**	**0.141026**	**0.941131**	**90.261793**	**8.309398**

In [31]:
```
display_experiment_results(experiment_results_true["cnn14_logstft"]["shap_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.866932**	**3.525641**	0.001048	0.128205	0.442302	86.934263	9.378820
topK_30_pos	0.819402	0.320513	0.247077	0.025641	0.699991	97.677030	10.091335
minmax_pos	0.494791	**0.000000**	**0.000000**	0.022436	0.733112	97.260683	10.237796
topK_5_pos	0.476380	**0.000000**	**0.000000**	0.012821	0.949986	97.279296	8.299783
pos_thresh_50	0.045245	0.641026	0.145455	**0.009615**	0.997592	97.715419	4.940646
topK_50	0.860424	**0.000000**	**0.000000**	0.019231	0.499994	97.549404	10.602145
pos_thresh_25	0.342238	**0.000000**	**0.000000**	0.022436	0.963501	97.027136	7.854634
bin	0.859379	**0.000000**	**0.000000**	0.019231	0.491929	97.497706	10.618033
minmax	0.817470	0.641026	**0.473305**	0.089744	0.072855	92.578307	11.285715
topK_5	0.476380	**0.000000**	**0.000000**	0.012821	0.949986	97.279296	8.299783
topK_30	0.819402	0.320513	0.247077	0.025641	0.699991	97.677030	10.091335
sigmoid	0.673730	1.282051	0.249070	0.224359	0.000562	77.652291	11.295279
sigmoid_pos	0.674058	1.282051	0.252754	**0.227564**	**0.000287**	**77.608474**	**11.295279**
pos_thresh_75	**0.000827**	0.320513	0.019721	0.012821	**0.998282**	**97.945908**	**2.146913**

STFT model clean - incorrect

In [32]:
```
display_experiment_results(experiment_results_false["cnn14_logstft"]["saliency_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.583857	**21.590909**	0.002940	**0.500000**	0.249997	**49.940538**	5.301072
topK_30_pos	0.555864	3.409091	3.089041	0.034091	0.699991	96.081514	10.091335
minmax_pos	**0.589870**	4.545455	1.566937	0.079545	0.788733	90.544596	9.957932
topK_5_pos	0.512585	3.409091	2.632922	0.034091	0.949986	96.021290	8.299783
pos_thresh_50	0.053851	1.136364	0.681866	0.034091	**0.998995**	94.745940	3.573356
topK_50	0.573580	2.272727	1.959591	0.022727	0.499994	**96.829311**	10.602145
pos_thresh_25	0.262116	3.409091	0.675997	0.022727	0.991514	95.267087	6.229557
bin	0.573162	2.272727	1.958704	0.022727	0.500076	96.794247	10.601947
minmax	0.573092	15.909091	**9.150131**	0.238636	0.037301	68.956449	11.292049
topK_5	0.512585	3.409091	2.632922	0.034091	0.949986	96.021290	8.299783
topK_30	0.555864	3.409091	3.089041	0.034091	0.699991	96.081514	10.091335
sigmoid	0.518476	4.545455	2.371716	0.079545	0.000139	87.235531	**11.295279**
sigmoid_pos	0.516426	4.545455	2.282114	0.079545	**0.000069**	87.538266	11.295279
pos_thresh_75	**0.011976**	**0.000000**	**0.000000**	**0.011364**	0.997306	95.577996	**1.473861**

In [33]:
```
display_experiment_results(experiment_results_false["cnn14_logstft"]["gradcam_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.536529**	**35.227273**	0.184548	**0.715909**	0.181783	**28.467397**	**3.855392**
topK_30_pos	0.492952	23.863636	0.004043	0.511364	0.365870	47.674545	5.275132
minmax_pos	0.260011	2.272727	0.398896	0.068182	0.580542	91.792949	8.261096
topK_5_pos	0.259980	13.636364	0.002665	0.284091	0.701678	69.958815	6.130854
pos_thresh_50	0.214227	**0.000000**	**0.000000**	0.079545	0.709466	90.265962	7.500912
topK_50	0.460792	6.818182	1.035443	0.250000	0.499912	70.300123	10.602308
pos_thresh_25	0.295724	2.272727	1.637856	0.102273	0.570356	83.870576	8.082806
bin	0.347414	9.090909	1.251668	0.272727	0.449259	69.129412	7.288249
minmax	0.464737	4.545455	**2.156380**	0.102273	0.270848	83.099057	11.163179
topK_5	0.121334	**0.000000**	**0.000000**	0.034091	**0.949964**	**94.726891**	8.300231
topK_30	0.379601	3.409091	1.392433	0.125000	0.699911	83.914835	10.091600
sigmoid	0.511993	4.545455	2.153358	0.079545	0.011028	88.065612	**11.295047**
sigmoid_pos	0.517645	4.545455	2.122453	0.079545	**0.004862**	87.398976	9.626561
pos_thresh_75	**0.112632**	**0.000000**	**0.000000**	**0.011364**	0.805798	94.556810	6.493573

In [34]:
```
display_experiment_results(experiment_results_false["cnn14_logstft"]["lime_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.571876**	19.318182	8.291065	0.329545	0.454352	64.427788	9.770401
topK_30_pos	0.545752	10.227273	4.974083	0.193182	0.692452	77.441519	10.115883
minmax_pos	0.528683	3.409091	1.162153	0.125000	0.632914	89.202784	10.485179
topK_5_pos	0.282679	2.272727	0.446200	0.068182	0.936471	88.882856	8.528274
pos_thresh_50	0.402962	**1.136364**	0.396439	0.079545	0.876820	89.419504	9.023198
topK_50	0.569587	18.181818	9.447117	0.272727	0.493305	70.011761	10.615364
pos_thresh_25	0.529402	3.409091	1.766459	0.136364	0.705919	81.873358	9.938019
bin	0.569395	**25.000000**	**12.278881**	**0.488636**	0.305734	**48.791411**	10.909807
minmax	0.548853	6.818182	4.038918	0.125000	0.267736	84.486198	11.148491
topK_5	0.282679	2.272727	0.446200	0.068182	0.936471	88.882856	8.528274
topK_30	0.545752	10.227273	4.974083	0.193182	0.692452	77.441519	10.115883
sigmoid	0.520885	4.545455	1.890153	0.079545	0.005856	86.907575	11.295183
sigmoid_pos	0.520906	4.545455	1.906799	0.090909	**0.004478**	86.964142	**11.295207**
pos_thresh_75	**0.226106**	**1.136364**	**0.358961**	**0.056818**	**0.950215**	**92.804292**	**8.109034**

In [35]:
```
display_experiment_results(experiment_results_false["cnn14_logstft"]["shap_clean"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.572406	**4.545455**	1.713856	**0.079545**	0.471585	91.785030	9.999750
topK_30_pos	0.567148	1.136364	0.883552	0.034091	0.699991	96.320111	10.091335
minmax_pos	0.315426	1.136364	0.120598	**0.011364**	0.732705	94.697038	10.239613
topK_5_pos	0.333723	1.136364	0.136690	0.034091	0.949986	93.894961	8.299783
pos_thresh_50	0.034279	1.136364	0.254741	**0.011364**	0.997548	96.957944	4.916781
topK_50	**0.573036**	2.272727	1.713665	0.022727	0.499994	**97.463520**	10.602145
pos_thresh_25	0.267677	**0.000000**	**0.000000**	**0.011364**	0.964013	96.971944	7.836621
bin	0.572843	2.272727	1.710430	0.022727	0.489782	97.454102	10.622260
minmax	0.547897	3.409091	1.015477	0.068182	0.072308	92.218731	11.285838
topK_5	0.333723	1.136364	0.136690	0.034091	0.949986	93.894961	8.299783
topK_30	0.567148	1.136364	0.883552	0.034091	0.699991	96.320111	10.091335
sigmoid	0.513871	**4.545455**	**2.193745**	0.068182	0.000593	87.909972	11.295279
sigmoid_pos	0.514032	**4.545455**	2.192524	0.068182	**0.000304**	**87.883667**	**11.295279**
pos_thresh_75	**0.001278**	**0.000000**	**0.000000**	**0.011364**	**0.998327**	96.646713	**2.188824**

Mask experiments clean - mel model

In [36]:
```
display_experiment_results(mask_experiment_results["cnn14_logmel"]["clean"])
```

```
--- topK_50_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.923509	**17.000000**	0.010820	0.660000	**0.173750**	34.228729	**3.364614**
gradcam	**0.620931**	11.750000	0.986515	0.652500	0.376861	38.971917	7.311441
lime	0.827086	13.500000	**5.598555**	**0.750000**	0.461311	**30.218063**	9.410670
shap	**0.927128**	**0.000000**	**0.000000**	**0.017500**	**0.500000**	**98.489136**	**9.682342**

```
--- topK_30_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.924342**	**0.000000**	**0.000000**	**0.015000**	**0.700006**	**98.380550**	9.171495
gradcam	**0.362777**	8.000000	0.610826	0.445000	**0.594143**	60.972215	**7.798626**
lime	0.623726	**10.000000**	**4.870080**	**0.542500**	0.674179	**49.493281**	**9.251675**
shap	0.920323	**0.000000**	**0.000000**	**0.015000**	0.700006	98.376693	9.171495

```
--- minmax_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.765816**	0.250000	0.049572	0.087500	**0.789568**	94.036667	**9.025774**
gradcam	**0.431486**	0.750000	0.675307	0.362500	**0.396158**	70.565552	9.305825
lime	0.757147	**4.000000**	**1.739817**	**0.437500**	0.547565	**60.697763**	**9.736422**
shap	0.742941	**0.000000**	**0.000000**	**0.017500**	0.730384	**98.140806**	9.325663

```
--- topK_5_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.760572**	**0.000000**	**0.000000**	**0.022500**	**0.949973**	**97.641902**	7.380256
gradcam	**0.079183**	**3.250000**	0.000789	0.140000	**0.889483**	88.374592	**6.940699**
lime	0.159315	2.000000	**1.222972**	**0.305000**	0.913795	**72.973278**	**7.872777**
shap	0.644693	**0.000000**	**0.000000**	0.027500	**0.949973**	97.529152	7.380256

```
--- pos_thresh_50 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.034041**	**0.250000**	**0.173731**	**0.017500**	**0.998818**	97.718493	**3.126737**
gradcam	0.366132	**4.250000**	1.610246	0.462500	**0.539787**	60.367838	8.580185
lime	**0.486153**	3.000000	**1.786661**	**0.472500**	0.748973	**57.984101**	**8.786603**
shap	0.059368	**0.250000**	0.190206	0.025000	0.996374	**97.753463**	4.424030

```
--- topK_50 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.925488	**0.000000**	**0.000000**	0.020000	**0.500000**	98.354752	9.682342
gradcam	**0.525585**	4.500000	2.390889	0.547500	0.499100	50.501074	9.684130
lime	0.825345	**13.750000**	**6.322732**	**0.740000**	**0.476548**	**31.117691**	**9.727269**
shap	**0.927128**	**0.000000**	**0.000000**	**0.017500**	**0.500000**	**98.489136**	**9.682342**

```
--- pos_thresh_25 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.266565**	0.500000	0.321346	0.025000	**0.990407**	97.161012	**5.499278**
gradcam	0.599464	**12.250000**	2.903764	0.685000	**0.347608**	37.228447	7.528186
lime	**0.802991**	9.750000	**4.796789**	**0.700000**	0.561653	**35.022268**	**9.408597**
shap	0.514186	**0.000000**	**0.000000**	**0.020000**	0.955756	**97.999591**	7.109132

```
--- bin ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.925405	**0.000000**	**0.000000**	0.020000	**0.501437**	98.364178	9.679418
gradcam	**0.718901**	19.500000	2.312055	0.782500	**0.195505**	24.363625	**4.918478**
lime	0.899183	**28.750000**	**12.359402**	**0.932500**	0.200351	**8.067020**	9.534232
shap	**0.927023**	**0.000000**	**0.000000**	**0.015000**	0.488779	**98.448432**	**9.704492**

```
--- minmax ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.865400	3.750000	**3.145995**	0.270000	**0.038238**	77.512300	**10.372001**
gradcam	**0.513961**	1.250000	0.771900	0.392500	0.335331	66.672894	10.150634
lime	0.788818	**4.750000**	2.500606	**0.482500**	**0.392213**	**56.327209**	**10.072025**
shap	**0.896360**	**0.000000**	**0.000000**	**0.080000**	0.069193	**93.939058**	10.366691

```
--- topK_5 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.760572**	**0.000000**	**0.000000**	**0.022500**	**0.949973**	**97.641902**	7.380256
gradcam	**0.030628**	**0.000000**	**0.000000**	0.095000	0.948803	93.808333	7.403008
lime	0.159315	**2.000000**	**1.222972**	**0.305000**	**0.913795**	**72.973278**	**7.872777**
shap	0.644693	**0.000000**	**0.000000**	0.027500	**0.949973**	97.529152	**7.380256**

```
--- topK_30 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.924342**	**0.000000**	**0.000000**	**0.015000**	**0.700006**	**98.380550**	**9.171495**
gradcam	**0.273394**	2.250000	0.820703	0.352500	0.698777	71.267326	9.175542
lime	0.623726	**10.000000**	**4.870080**	**0.542500**	**0.674179**	**49.493281**	**9.251675**
shap	0.920323	**0.000000**	**0.000000**	**0.015000**	0.700006	98.376693	9.171495

```
--- sigmoid ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.494250	**3.500000**	**1.586628**	**0.705000**	**0.000435**	**38.663598**	**10.375488**
gradcam	**0.503142**	2.000000	0.972570	0.677500	**0.026291**	41.579207	**10.373997**
lime	0.497470	2.000000	0.954793	0.677500	0.014309	42.379379	10.374871
shap	**0.411541**	**1.750000**	**0.706020**	**0.635000**	0.001600	**45.859315**	10.375483

```
--- sigmoid_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.459911	2.500000	1.171660	**0.677500**	**0.000218**	41.395925	**10.375489**
gradcam	**0.509011**	**2.750000**	**1.287992**	0.672500	**0.021327**	**41.113377**	**9.803656**
lime	0.496602	**2.000000**	0.963045	0.675000	0.013037	42.468471	10.374927
shap	**0.413540**	**2.000000**	**0.717767**	**0.632500**	0.000816	**45.765673**	10.375487

```
--- pos_thresh_75 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.004156	**0.000000**	**0.000000**	0.030000	0.998694	97.389923	**1.330769**
gradcam	0.158799	0.250000	0.219627	0.220000	**0.782398**	83.862255	7.872705
lime	**0.238406**	**3.250000**	**1.655848**	**0.350000**	0.861821	**68.189178**	**8.186731**
shap	**0.000941**	**0.000000**	**0.000000**	**0.027500**	**0.998980**	**97.767977**	1.983555

Mask experiments - stft model

In [37]:
```
display_experiment_results(mask_experiment_results["cnn14_logstft"]["clean"])
```

```
--- topK_50_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.804243**	21.250000	**0.005357**	0.515000	0.246247	48.376074	5.221556
gradcam	**0.724579**	**24.750000**	0.217910	**0.702500**	**0.224974**	**31.075000**	**4.771012**
lime	0.765314	16.750000	**8.681377**	0.452500	**0.472411**	55.331106	**10.164076**
shap	0.802137	**3.750000**	0.377866	**0.117500**	0.448744	**88.001432**	9.515425

--- topK_30_pos ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.775971**	1.000000	0.695137	0.030000	**0.699991**	96.617813	10.091335
gradcam	**0.572529**	**16.250000**	**0.219069**	**0.517500**	**0.442721**	**50.726126**	**6.382848**
lime	0.694155	10.000000	**5.252163**	0.337500	0.691593	67.192280	**10.118696**
shap	0.763906	**0.500000**	0.387102	**0.027500**	**0.699991**	**97.378508**	10.091335

--- minmax_pos ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.793905**	**1.250000**	0.374701	0.045000	**0.783134**	94.492255	9.997833
gradcam	**0.320230**	0.500000	0.087757	0.100000	**0.610100**	90.744003	**9.346533**
lime	0.633585	1.000000	**0.381902**	**0.180000**	0.621340	**84.303404**	**10.527688**
shap	0.455331	**0.250000**	**0.026532**	**0.020000**	0.733023	**96.696681**	10.238195

--- topK_5_pos ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.617889**	0.750000	**0.579243**	0.030000	**0.949986**	**96.632662**	8.299783
gradcam	**0.191031**	**6.250000**	0.071148	**0.157500**	**0.835978**	**84.384347**	**7.304013**
lime	0.250140	0.750000	0.135246	0.135000	0.936524	89.718892	**8.527748**
shap	0.444995	**0.250000**	**0.030072**	**0.017500**	**0.949986**	96.534742	8.299783

--- pos_thresh_50 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.031167**	0.500000	0.253879	0.030000	**0.999009**	96.453913	**3.677172**
gradcam	0.266586	**0.250000**	0.207937	0.117500	**0.762384**	89.263126	8.492369
lime	**0.431767**	**0.750000**	**0.356323**	**0.182500**	0.868335	**84.286786**	**9.100906**
shap	0.042832	**0.750000**	**0.169498**	**0.010000**	0.997583	**97.548774**	4.935396

--- topK_50 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.791540	**0.500000**	0.431110	0.027500	**0.499994**	96.391078	10.602145
gradcam	**0.585838**	4.000000	1.152864	**0.437500**	0.499938	59.861858	10.602257
lime	0.764448	**15.500000**	**9.093660**	0.427500	**0.493322**	**57.746470**	**10.615335**
shap	**0.797198**	**0.500000**	**0.377006**	**0.020000**	**0.499994**	**97.530510**	**10.602145**

--- pos_thresh_25 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.219041**	1.250000	0.177886	0.040000	**0.991120**	95.720335	**6.327378**
gradcam	0.398511	2.250000	0.973528	0.267500	**0.600928**	73.924376	9.142811
lime	**0.676561**	**5.750000**	**2.650058**	**0.335000**	0.697021	**68.592485**	**9.986101**
shap	0.325835	**0.000000**	**0.000000**	**0.020000**	0.963614	**97.014994**	7.850671

--- bin ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.791281	**0.500000**	0.430915	0.027500	**0.500274**	96.420557	10.601551
gradcam	**0.474595**	7.500000	1.070762	0.497500	0.451437	54.120088	**8.475080**
lime	0.790285	**26.000000**	**14.205455**	**0.685000**	**0.272667**	**32.028679**	**10.931619**
shap	**0.796341**	**0.500000**	**0.376295**	**0.020000**	0.491457	**97.488113**	10.618963

--- minmax ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.788165**	**10.000000**	**6.286535**	**0.342500**	**0.038138**	**66.196693**	**11.292008**
gradcam	**0.567456**	1.750000	**0.520995**	0.262500	0.295466	75.694391	11.139094
lime	0.685044	3.000000	1.561553	0.237500	**0.311617**	77.522342	**11.105058**
shap	0.758164	**1.250000**	0.592583	**0.085000**	0.072735	**92.499200**	11.285742

```
--- topK_5 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.617889**	**0.750000**	**0.579243**	0.030000	**0.949986**	**96.632662**	8.299783
gradcam	**0.114764**	**0.250000**	0.070154	0.040000	0.949974	95.877295	8.300039
lime	0.250140	**0.750000**	0.135246	**0.135000**	**0.936524**	**89.718892**	**8.527748**
shap	0.444995	**0.250000**	**0.030072**	**0.017500**	**0.949986**	96.534742	**8.299783**

```
--- topK_30 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.775971**	1.000000	0.695137	0.030000	**0.699991**	96.617813	**10.091335**
gradcam	**0.425481**	1.500000	0.694756	0.272500	0.699953	76.859205	10.091461
lime	0.694155	**10.000000**	**5.252163**	**0.337500**	**0.691593**	**67.192280**	**10.118696**
shap	0.763906	**0.500000**	**0.387102**	**0.027500**	**0.699991**	**97.378508**	10.091335

```
--- sigmoid ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.643469	**2.500000**	0.838001	0.202500	**0.000142**	79.326670	**11.295279**
gradcam	**0.634957**	**1.750000**	0.747174	**0.190000**	**0.014194**	**80.017202**	**11.294890**
lime	**0.647775**	**2.500000**	**0.875570**	**0.217500**	0.007533	**78.297433**	11.295110
shap	0.638561	2.000000	**0.676899**	**0.190000**	0.000569	79.908981	11.295279

```
--- sigmoid_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.641400	**2.000000**	0.750599	0.197500	**0.000071**	79.565167	**11.295279**
gradcam	0.645253	2.250000	0.778206	0.205000	**0.007431**	79.146000	**10.504438**
lime	**0.648529**	**2.500000**	**0.878564**	**0.222500**	0.006348	**78.271001**	11.295134
shap	**0.638853**	**2.000000**	**0.679504**	**0.192500**	0.000291	**79.869016**	11.295279

```
--- pos_thresh_75 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.006663	**0.000000**	**0.000000**	**0.010000**	0.997741	97.268040	**1.625156**
gradcam	0.101793	**0.000000**	**0.000000**	0.050000	**0.879805**	95.176441	7.329255
lime	**0.213145**	**0.250000**	**0.078971**	**0.122500**	0.943129	**90.821143**	**8.265318**
shap	**0.000926**	**0.250000**	0.015382	0.012500	**0.998292**	**97.660085**	2.156133

Noisy experiments - mel model

In [38]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["saliency_white"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.711190	**32.500000**	0.009746	**0.745000**	0.127500	**25.342996**	2.468997
topK_30_pos	**0.713284**	0.500000	0.175175	0.022500	0.700006	97.727077	9.171495
minmax_pos	0.692917	0.500000	0.219268	0.100000	0.783581	92.279278	9.085023
topK_5_pos	0.684098	**0.000000**	**0.000000**	**0.007500**	0.949973	**98.185153**	7.380256
pos_thresh_50	0.124662	0.500000	0.232667	0.030000	**0.998953**	96.182471	2.896074
topK_50	0.712000	0.500000	0.149811	0.022500	0.500000	97.723036	9.682342
pos_thresh_25	0.401284	0.500000	0.384639	0.017500	0.992539	97.143905	5.222684
bin	0.711829	0.500000	0.155864	0.022500	0.502705	97.702287	9.676883
minmax	0.696012	4.750000	3.127126	0.102500	0.035328	89.096607	10.372436
topK_5	0.684098	**0.000000**	**0.000000**	**0.007500**	0.949973	**98.185153**	7.380256
topK_30	**0.713284**	0.500000	0.175175	0.022500	0.700006	97.727077	9.171495
sigmoid	0.551320	8.500000	**4.458095**	0.475000	0.000461	59.530889	10.375488
sigmoid_pos	0.522607	7.750000	3.453662	0.437500	**0.000231**	62.839514	**10.375489**
pos_thresh_75	**0.036817**	**0.000000**	**0.000000**	0.037500	0.998527	96.274690	**1.169532**

In [39]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["saliency_room"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.850689	**27.250000**	0.010742	**0.685000**	0.157500	**31.044639**	3.049938
topK_30_pos	0.850516	**0.000000**	**0.000000**	**0.012500**	0.700006	98.061626	9.171495
minmax_pos	0.792496	0.500000	0.211552	0.082500	0.776968	94.060062	9.124363
topK_5_pos	0.766804	**0.000000**	**0.000000**	0.020000	0.949973	97.426624	7.380256
pos_thresh_50	0.084152	0.500000	0.212758	0.017500	**0.998847**	97.245856	3.084981
topK_50	0.850997	**0.000000**	**0.000000**	**0.012500**	0.500000	98.094113	9.682342
pos_thresh_25	0.387530	0.750000	0.328547	0.025000	0.990762	96.975251	5.462471
bin	**0.851018**	**0.000000**	**0.000000**	**0.012500**	0.501807	**98.102482**	9.678695
minmax	0.824637	3.250000	2.295471	0.117500	0.038908	88.139321	10.371981
topK_5	0.766804	**0.000000**	**0.000000**	0.020000	0.949973	97.426624	7.380256
topK_30	0.850516	**0.000000**	**0.000000**	**0.012500**	0.700006	98.061626	9.171495
sigmoid	0.596879	6.000000	**3.488200**	0.572500	0.000517	51.145902	10.375488
sigmoid_pos	0.560616	4.750000	2.694025	0.545000	**0.000259**	54.838752	**10.375489**
pos_thresh_75	**0.023657**	**0.000000**	**0.000000**	0.025000	0.998631	97.021990	**1.284587**

In [40]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["saliency_horse"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.790323**	**19.250000**	0.007534	0.490000	0.256250	**49.701692**	4.962200
topK_30_pos	0.788420	**0.000000**	**0.000000**	**0.002500**	0.700006	97.230655	9.171495
minmax_pos	0.769024	0.250000	0.228765	0.067500	0.774734	92.016089	9.143446
topK_5_pos	0.695200	0.500000	0.155136	0.012500	0.949973	95.898839	7.380256
pos_thresh_50	0.107027	0.500000	0.203184	0.010000	0.998757	97.487749	3.272373
topK_50	0.789539	**0.000000**	**0.000000**	**0.002500**	0.500000	96.983300	9.682342
pos_thresh_25	0.386120	1.000000	0.463934	0.007500	0.989099	**97.536813**	5.682875
bin	0.789483	**0.000000**	**0.000000**	**0.002500**	0.499990	96.975555	9.682347
minmax	0.774518	10.750000	**7.401402**	0.277500	0.040483	72.553143	10.371809
topK_5	0.695200	0.500000	0.155136	0.012500	0.949973	95.898839	7.380256
topK_30	0.788420	**0.000000**	**0.000000**	**0.002500**	0.700006	97.230655	9.171495
sigmoid	0.611014	3.500000	1.996095	**0.555000**	0.000539	56.130944	10.375488
sigmoid_pos	0.575920	3.000000	1.416806	0.512500	**0.000269**	61.363719	**10.375489**
pos_thresh_75	**0.021554**	**0.000000**	**0.000000**	0.012500	**0.998796**	96.980906	**1.429625**

In [41]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["gradcam_white"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.614212**	**22.750000**	0.895524	**0.607500**	0.279518	**41.201800**	5.423072
topK_30_pos	0.507756	17.750000	0.732232	0.435000	0.470052	56.851181	6.170159
minmax_pos	0.410126	1.750000	0.942711	0.162500	0.455897	86.231142	8.169024
topK_5_pos	0.216792	9.750000	**0.001232**	0.220000	0.785244	78.910743	6.123868
pos_thresh_50	0.367672	6.000000	1.895025	0.245000	0.578542	77.531645	7.416078
topK_50	0.552914	5.500000	2.520131	0.292500	0.499065	72.616278	9.684207
pos_thresh_25	0.469095	9.500000	2.522458	0.367500	0.425811	64.546311	6.748737
bin	0.526246	15.750000	**2.547937**	0.510000	0.291736	49.573783	**5.396175**
minmax	0.545293	1.750000	1.096807	0.205000	0.346065	81.683006	10.148230
topK_5	**0.134890**	**0.250000**	0.061107	**0.070000**	**0.948927**	**94.279909**	7.400621
topK_30	0.424646	2.500000	1.210096	0.157500	0.698876	83.873959	9.175246
sigmoid	0.514549	5.250000	1.910096	0.372500	0.021900	67.793831	**10.374392**
sigmoid_pos	0.523618	5.500000	2.506272	0.380000	**0.014240**	66.116355	8.922229
pos_thresh_75	0.221480	0.500000	0.139204	0.102500	0.744058	91.551230	6.855847

In [42]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["gradcam_room"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.668329**	15.500000	1.049485	0.617500	0.328206	42.246285	6.367224
topK_30_pos	0.487269	10.000000	0.239408	0.420000	0.531187	61.041883	6.973047
minmax_pos	0.423070	0.500000	0.199785	0.227500	0.443758	82.149382	8.831108
topK_5_pos	0.146072	4.500000	0.001316	0.157500	0.846876	85.622335	6.605853
pos_thresh_50	0.360350	2.750000	0.839456	0.307500	0.578900	74.603804	8.099933
topK_50	0.595938	4.500000	2.336654	0.417500	0.499191	62.563061	9.683955
pos_thresh_25	0.527204	10.500000	**3.708322**	0.525000	0.398001	52.277242	7.448694
bin	0.624585	**16.750000**	2.458265	**0.645000**	0.262752	**37.184366**	**5.513788**
minmax	0.553362	1.250000	0.568341	0.272500	0.331609	76.072015	10.168424
topK_5	**0.077781**	**0.000000**	**0.000000**	**0.062500**	**0.948867**	**95.579716**	7.401766
topK_30	0.383433	1.750000	0.702444	0.255000	0.698868	78.844232	9.175269
sigmoid	0.558418	3.000000	1.595462	0.535000	0.023324	57.186894	**10.374343**
sigmoid_pos	0.565542	3.500000	1.996931	0.542500	**0.016902**	56.205008	9.492769
pos_thresh_75	0.182597	**0.000000**	**0.000000**	0.135000	0.779157	89.195469	7.443469

In [43]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["gradcam_horse"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.668687**	**16.750000**	0.851790	0.522500	0.343045	50.511042	**6.658016**
topK_30_pos	0.456246	8.750000	0.002277	0.285000	0.576740	73.302948	7.569022
minmax_pos	0.503738	0.750000	0.092385	0.147500	0.489186	88.137892	9.195824
topK_5_pos	0.118517	3.750000	**0.000537**	0.100000	0.884974	90.037609	6.899170
pos_thresh_50	0.449253	2.000000	0.546866	0.235000	0.606197	80.000784	8.682833
topK_50	0.612718	3.750000	1.824735	0.307500	0.499043	71.618280	9.684251
pos_thresh_25	0.575466	7.750000	1.807158	0.435000	0.437871	59.357193	8.634937
bin	0.646846	13.750000	**2.481985**	**0.595000**	0.311681	**42.425838**	6.834141
minmax	0.665791	2.250000	0.614114	0.255000	0.302349	78.446919	10.195314
topK_5	**0.093737**	**0.250000**	0.023225	**0.037500**	**0.948990**	**96.102285**	7.399404
topK_30	0.393378	0.500000	0.110620	0.142500	0.699018	87.259372	9.174775
sigmoid	0.586694	1.000000	0.272882	0.445000	0.045033	66.063212	**10.371287**
sigmoid_pos	0.594669	2.250000	0.595393	0.470000	**0.024390**	63.589368	9.907195
pos_thresh_75	0.251565	0.500000	0.216440	0.075000	0.799444	92.968666	7.877564

In [44]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["lime_white"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.661303	15.500000	5.588439	0.500000	0.436843	50.420955	9.111431
topK_30_pos	0.579218	10.250000	4.118558	0.360000	0.652824	64.583169	9.145879
minmax_pos	0.640144	5.500000	2.944553	0.292500	0.518474	72.856361	9.778440
topK_5_pos	**0.287504**	**2.500000**	**0.941906**	**0.165000**	**0.905188**	**83.750265**	**7.976897**
pos_thresh_50	0.543765	8.250000	4.268772	0.325000	0.710520	67.540012	8.939172
topK_50	0.662237	13.750000	6.133981	0.472500	0.466945	53.109298	9.745318
pos_thresh_25	0.655523	17.500000	8.751906	0.555000	0.506051	44.673501	9.432342
bin	**0.698812**	**34.250000**	**9.174560**	**0.802500**	0.187839	**19.663277**	8.035213
minmax	0.650651	7.500000	3.858202	0.312500	0.404169	70.803854	10.041012
topK_5	**0.287504**	**2.500000**	**0.941906**	**0.165000**	**0.905188**	**83.750265**	**7.976897**
topK_30	0.579632	9.750000	4.343810	0.355000	0.662899	65.145292	9.284801
sigmoid	0.557132	8.000000	3.849045	0.400000	0.015988	65.894752	10.374765
sigmoid_pos	0.555828	7.750000	3.768415	0.397500	**0.014469**	65.821766	**10.374838**
pos_thresh_75	0.408778	5.250000	2.258611	0.232500	0.833223	77.525128	8.406193

In [45]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["lime_room"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.798876	11.000000	3.884707	0.525000	0.465679	49.757447	9.482351
topK_30_pos	0.676907	6.000000	2.684843	0.387500	0.673884	64.779027	9.252643
minmax_pos	0.756607	**2.000000**	0.992042	0.267500	0.571788	78.139046	9.702122
topK_5_pos	**0.266320**	**2.000000**	1.103010	**0.170000**	**0.917428**	**84.912728**	**7.843242**
pos_thresh_50	0.545555	5.000000	2.517660	0.302500	0.779319	73.168008	8.676935
topK_50	0.799205	9.750000	4.356550	0.515000	0.477792	50.985642	9.725162
pos_thresh_25	0.765974	10.750000	4.329350	0.495000	0.599181	53.205151	9.282798
bin	**0.834633**	**22.750000**	**10.066187**	**0.822500**	0.209662	**21.224098**	9.733605
minmax	0.772891	2.500000	**0.969162**	0.275000	0.402839	75.501471	10.055631
topK_5	**0.266320**	**2.000000**	1.103010	**0.170000**	**0.917428**	**84.912728**	**7.843242**
topK_30	0.676907	6.000000	2.684843	0.387500	0.673884	64.779027	9.252643
sigmoid	0.598701	3.250000	1.934571	0.502500	0.015792	56.989645	10.374776
sigmoid_pos	0.596822	3.250000	1.912979	0.505000	**0.014285**	57.145403	**10.374840**
pos_thresh_75	0.331308	2.250000	1.468846	0.195000	0.880057	81.639244	8.071825

In [46]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["lime_horse"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.764370	19.750000	9.932483	0.655000	0.439142	38.065049	8.974500
topK_30_pos	0.662887	14.750000	8.590946	0.405000	0.672999	59.581706	9.227538
minmax_pos	0.699502	6.750000	4.104590	0.262500	0.604543	75.048172	9.633056
topK_5_pos	**0.273862**	4.500000	2.608519	**0.205000**	**0.916421**	**82.605794**	**7.849365**
pos_thresh_50	0.527689	10.250000	6.915780	0.317500	0.789854	70.807660	8.659089
topK_50	0.760747	21.750000	12.180873	0.640000	0.476016	39.704406	9.728505
pos_thresh_25	0.703865	15.500000	10.398968	0.512500	0.627666	50.686515	9.279216
bin	**0.780193**	**40.000000**	**20.360500**	**0.827500**	0.291061	**16.939316**	9.829493
minmax	0.730194	10.250000	6.102790	0.382500	0.368780	65.278803	10.106139
topK_5	**0.273862**	4.500000	2.608519	**0.205000**	**0.916421**	**82.605794**	**7.849365**
topK_30	0.662933	14.500000	8.590932	0.402500	0.674724	59.821911	9.250549
sigmoid	0.600107	4.000000	1.709758	0.497500	0.018723	61.679100	10.374649
sigmoid_pos	0.599394	**2.750000**	**1.428018**	0.480000	**0.015101**	62.498017	**10.374842**
pos_thresh_75	0.337981	5.250000	3.795244	0.232500	0.889431	80.521404	8.004952

In [47]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["shap_white"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.711890	0.750000	0.244811	0.022500	0.500000	97.825080	9.682342
topK_30_pos	**0.712049**	0.750000	0.239593	0.022500	0.700006	**97.841733**	9.171495
minmax_pos	0.703279	0.250000	0.133590	0.012500	0.721409	97.694101	9.358230
topK_5_pos	0.697979	0.250000	0.142631	0.010000	0.949973	97.190329	7.380256
pos_thresh_50	0.153013	1.000000	0.414723	0.037500	0.996068	96.786666	4.462922
topK_50	0.711890	0.750000	0.244811	0.022500	0.500000	97.825080	9.682342
pos_thresh_25	0.672607	**0.000000**	**0.000000**	**0.007500**	0.949855	97.280186	7.272439
bin	0.711994	0.750000	0.248285	0.022500	0.488620	97.833374	9.704824
minmax	0.707674	**0.000000**	**0.000000**	0.017500	0.081260	97.210558	10.363955
topK_5	0.697979	0.250000	0.142631	0.010000	0.949973	97.190329	7.380256
topK_30	**0.712049**	0.750000	0.239593	0.022500	0.700006	**97.841733**	9.171495
sigmoid	0.479692	**5.000000**	**1.995513**	0.380000	0.001059	69.050048	10.375487
sigmoid_pos	0.479328	**5.000000**	1.980919	**0.382500**	**0.000543**	**68.713899**	**10.375488**
pos_thresh_75	**0.014333**	**0.000000**	**0.000000**	0.035000	**0.998922**	96.935569	**1.893806**

In [48]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["shap_room"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	0.851707	**0.000000**	**0.000000**	0.012500	0.500000	98.118999	9.682342
topK_30_pos	0.848558	**0.000000**	**0.000000**	0.012500	0.700006	98.169867	9.171495
minmax_pos	0.827403	**0.000000**	**0.000000**	0.015000	0.721625	**98.417283**	9.356942
topK_5_pos	0.824963	**0.000000**	**0.000000**	0.020000	0.949973	97.573005	7.380256
pos_thresh_50	0.094349	**0.000000**	**0.000000**	0.015000	0.996874	97.482737	4.248237
topK_50	0.851707	**0.000000**	**0.000000**	0.012500	0.500000	98.118999	9.682342
pos_thresh_25	0.736986	**0.000000**	**0.000000**	**0.002500**	0.957153	98.339161	7.097326
bin	**0.851762**	**0.000000**	**0.000000**	0.012500	0.486988	98.107902	9.707996
minmax	0.844402	**0.000000**	**0.000000**	0.032500	0.066837	97.179150	10.367339
topK_5	0.824963	**0.000000**	**0.000000**	0.020000	0.949973	97.573005	7.380256
topK_30	0.848558	**0.000000**	**0.000000**	0.012500	0.700006	98.169867	9.171495
sigmoid	0.506164	3.000000	1.742738	**0.487500**	0.001007	61.328933	10.375487
sigmoid_pos	0.507642	**3.250000**	**1.760654**	**0.487500**	**0.000519**	**61.117844**	**10.375488**
pos_thresh_75	**0.002502**	**0.000000**	**0.000000**	0.017500	**0.998952**	97.195290	**1.867501**

In [49]:
```
display_experiment_results(experiment_results["cnn14_logmel"]["shap_horse"])
```

	FF	AI	AG	FidIn	SPS	AD	COMP
topK_50_pos	**0.790697**	0.250000	0.000001	0.005000	0.498750	96.701207	9.658136
topK_30_pos	0.783312	**0.000000**	**0.000000**	0.005000	0.700006	97.136149	9.171495
minmax_pos	0.753468	**0.000000**	**0.000000**	0.007500	0.727941	97.820285	9.333287
topK_5_pos	0.731777	0.500000	0.035973	0.022500	0.949973	95.778591	7.380256
pos_thresh_50	0.105702	0.500000	0.183802	0.017500	0.996972	**97.933303**	4.249547
topK_50	0.790343	**0.000000**	**0.000000**	**0.002500**	0.500000	96.830049	9.682342
pos_thresh_25	0.566562	0.250000	0.056329	0.025000	0.961684	96.388800	6.980273
bin	0.790175	**0.000000**	**0.000000**	0.005000	0.488257	96.767103	9.705524
minmax	0.788614	0.500000	0.111171	0.017500	0.067695	97.039444	10.367169
topK_5	0.731777	0.500000	0.035973	0.022500	0.949973	95.778591	7.380256
topK_30	0.783312	**0.000000**	**0.000000**	0.005000	0.700006	97.136149	9.171495
sigmoid	0.524772	**2.000000**	0.652221	0.415000	0.001090	68.324628	10.375487
sigmoid_pos	0.526666	**2.000000**	**0.657394**	**0.422500**	**0.000559**	**68.180132**	**10.375488**
pos_thresh_75	**0.003826**	**0.000000**	**0.000000**	0.020000	**0.998917**	97.433498	**1.839846**

Noisy experiments per mask - mel model

In [50]:
```
display_experiment_results(mask_experiment_results["cnn14_logmel"]["white"])
```

```
--- topK_50_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.711190	**32.500000**	**0.009746**	**0.745000**	**0.127500**	**25.342996**	**2.468997**
gradcam	**0.614212**	22.750000	0.895524	0.607500	0.279518	41.201800	5.423072
lime	0.661303	15.500000	**5.588439**	0.500000	0.436843	50.420955	9.111431
shap	**0.711890**	**0.750000**	0.244811	**0.022500**	**0.500000**	**97.825080**	**9.682342**

```
--- topK_30_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.713284**	**0.500000**	**0.175175**	**0.022500**	0.700006	97.727077	**9.171495**
gradcam	**0.507756**	**17.750000**	0.732232	**0.435000**	**0.470052**	**56.851181**	**6.170159**
lime	0.579218	10.250000	**4.118558**	0.360000	0.652824	64.583169	9.145879
shap	0.712049	0.750000	0.239593	**0.022500**	**0.700006**	**97.841733**	9.171495

```
--- minmax_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.692917	0.500000	0.219268	0.100000	**0.783581**	92.279278	9.085023
gradcam	**0.410126**	1.750000	0.942711	0.162500	**0.455897**	86.231142	**8.169024**
lime	0.640144	**5.500000**	**2.944553**	**0.292500**	0.518474	**72.856361**	**9.778440**
shap	**0.703279**	**0.250000**	**0.133590**	**0.012500**	0.721409	**97.694101**	9.358230

--- topK_5_pos ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.684098	**0.000000**	**0.000000**	**0.007500**	**0.949973**	**98.185153**	7.380256
gradcam	**0.216792**	**9.750000**	0.001232	**0.220000**	**0.785244**	**78.910743**	**6.123868**
lime	0.287504	2.500000	**0.941906**	0.165000	0.905188	83.750265	**7.976897**
shap	**0.697979**	0.250000	0.142631	0.010000	**0.949973**	97.190329	7.380256

--- pos_thresh_50 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.124662**	**0.500000**	**0.232667**	**0.030000**	**0.998953**	96.182471	**2.896074**
gradcam	0.367672	6.000000	1.895025	0.245000	**0.578542**	77.531645	7.416078
lime	**0.543765**	**8.250000**	**4.268772**	**0.325000**	0.710520	**67.540012**	**8.939172**
shap	0.153013	1.000000	0.414723	0.037500	0.996068	**96.786666**	4.462922

--- topK_50 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.712000**	**0.500000**	**0.149811**	**0.022500**	**0.500000**	97.723036	**9.682342**
gradcam	**0.552914**	5.500000	2.520131	0.292500	0.499065	72.616278	9.684207
lime	0.662237	**13.750000**	**6.133981**	**0.472500**	**0.466945**	**53.109298**	**9.745318**
shap	0.711890	0.750000	0.244811	**0.022500**	**0.500000**	**97.825080**	9.682342

--- pos_thresh_25 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.401284**	0.500000	0.384639	0.017500	**0.992539**	97.143905	**5.222684**
gradcam	0.469095	9.500000	2.522458	0.367500	**0.425811**	64.546311	6.748737
lime	0.655523	**17.500000**	**8.751906**	**0.555000**	0.506051	**44.673501**	**9.432342**
shap	**0.672607**	**0.000000**	**0.000000**	**0.007500**	0.949855	**97.280186**	7.272439

--- bin ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.711829	**0.500000**	**0.155864**	**0.022500**	**0.502705**	97.702287	9.676883
gradcam	**0.526246**	15.750000	2.547937	0.510000	0.291736	49.573783	**5.396175**
lime	0.698812	**34.250000**	**9.174560**	**0.802500**	**0.187839**	**19.663277**	8.035213
shap	**0.711994**	0.750000	0.248285	**0.022500**	0.488620	**97.833374**	**9.704824**

--- minmax ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.696012	4.750000	3.127126	0.102500	**0.035328**	89.096607	**10.372436**
gradcam	**0.545293**	1.750000	1.096807	0.205000	0.346065	81.683006	10.148230
lime	0.650651	**7.500000**	**3.858202**	**0.312500**	**0.404169**	**70.803854**	**10.041012**
shap	**0.707674**	**0.000000**	**0.000000**	**0.017500**	0.081260	**97.210558**	10.363955

--- topK_5 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.684098	**0.000000**	**0.000000**	**0.007500**	**0.949973**	**98.185153**	**7.380256**
gradcam	**0.134890**	0.250000	0.061107	0.070000	0.948927	94.279909	7.400621
lime	0.287504	**2.500000**	**0.941906**	**0.165000**	**0.905188**	**83.750265**	**7.976897**
shap	**0.697979**	0.250000	0.142631	0.010000	**0.949973**	97.190329	7.380256

--- topK_30 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.713284**	**0.500000**	**0.175175**	**0.022500**	0.700006	97.727077	9.171495
gradcam	**0.424646**	2.500000	1.210096	0.157500	0.698876	83.873959	9.175246
lime	0.579632	**9.750000**	**4.343810**	**0.355000**	**0.662899**	**65.145292**	**9.284801**
shap	0.712049	0.750000	0.239593	**0.022500**	**0.700006**	**97.841733**	**9.171495**

```
--- sigmoid ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.551320	**8.500000**	**4.458095**	**0.475000**	**0.000461**	**59.530889**	**10.375488**
gradcam	0.514549	5.250000	**1.910096**	**0.372500**	**0.021900**	67.793831	**10.374392**
lime	**0.557132**	8.000000	3.849045	0.400000	0.015988	65.894752	10.374765
shap	**0.479692**	**5.000000**	1.995513	0.380000	0.001059	**69.050048**	10.375487

```
--- sigmoid_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.522607	**7.750000**	3.453662	**0.437500**	**0.000231**	**62.839514**	**10.375489**
gradcam	0.523618	5.500000	2.506272	**0.380000**	0.014240	66.116355	**8.922229**
lime	**0.555828**	**7.750000**	**3.768415**	0.397500	**0.014469**	65.821766	10.374838
shap	**0.479328**	**5.000000**	**1.980919**	0.382500	0.000543	**68.713899**	10.375488

```
--- pos_thresh_75 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.036817	**0.000000**	**0.000000**	0.037500	0.998527	96.274690	**1.169532**
gradcam	0.221480	0.500000	0.139204	0.102500	**0.744058**	91.551230	6.855847
lime	**0.408778**	**5.250000**	**2.258611**	**0.232500**	0.833223	**77.525128**	**8.406193**
shap	**0.014333**	**0.000000**	**0.000000**	**0.035000**	**0.998922**	**96.935569**	1.893806

In [51]:
```
display_experiment_results(mask_experiment_results["cnn14_logmel"]["room"])
```

```
--- topK_50_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.850689	**27.250000**	0.010742	**0.685000**	**0.157500**	**31.044639**	**3.049938**
gradcam	**0.668329**	15.500000	1.049485	0.617500	0.328206	42.246285	6.367224
lime	0.798876	11.000000	**3.884707**	0.525000	0.465679	49.757447	9.482351
shap	**0.851707**	**0.000000**	**0.000000**	**0.012500**	**0.500000**	**98.118999**	**9.682342**

```
--- topK_30_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.850516**	**0.000000**	**0.000000**	**0.012500**	**0.700006**	98.061626	9.171495
gradcam	**0.487269**	**10.000000**	0.239408	**0.420000**	**0.531187**	**61.041883**	**6.973047**
lime	0.676907	6.000000	**2.684843**	0.387500	0.673884	64.779027	**9.252643**
shap	0.848558	**0.000000**	**0.000000**	**0.012500**	0.700006	**98.169867**	9.171495

```
--- minmax_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.792496	0.500000	0.211552	0.082500	**0.776968**	94.060062	9.124363
gradcam	**0.423070**	0.500000	0.199785	0.227500	**0.443758**	82.149382	**8.831108**
lime	0.756607	**2.000000**	**0.992042**	**0.267500**	0.571788	**78.139046**	**9.702122**
shap	**0.827403**	**0.000000**	**0.000000**	**0.015000**	0.721625	**98.417283**	9.356942

```
--- topK_5_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.766804	**0.000000**	**0.000000**	**0.020000**	**0.949973**	97.426624	7.380256
gradcam	**0.146072**	**4.500000**	0.001316	0.157500	**0.846876**	85.622335	**6.605853**
lime	0.266320	2.000000	**1.103010**	**0.170000**	0.917428	**84.912728**	**7.843242**
shap	**0.824963**	**0.000000**	**0.000000**	**0.020000**	**0.949973**	**97.573005**	7.380256

```
--- pos_thresh_50 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.084152**	0.500000	0.212758	0.017500	**0.998847**	97.245856	**3.084981**
gradcam	0.360350	2.750000	0.839456	**0.307500**	**0.578900**	74.603804	8.099933
lime	**0.545555**	**5.000000**	**2.517660**	0.302500	0.779319	**73.168008**	**8.676935**
shap	0.094349	**0.000000**	**0.000000**	**0.015000**	0.996874	**97.482737**	4.248237

--- topK_50 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.850997	**0.000000**	**0.000000**	**0.012500**	**0.500000**	98.094113	9.682342
gradcam	**0.595938**	4.500000	2.336654	0.417500	0.499191	62.563061	9.683955
lime	0.799205	**9.750000**	**4.356550**	**0.515000**	**0.477792**	**50.985642**	**9.725162**
shap	**0.851707**	**0.000000**	**0.000000**	**0.012500**	**0.500000**	**98.118999**	**9.682342**

--- pos_thresh_25 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.387530**	0.750000	0.328547	0.025000	**0.990762**	96.975251	**5.462471**
gradcam	0.527204	10.500000	3.708322	**0.525000**	**0.398001**	**52.277242**	7.448694
lime	**0.765974**	**10.750000**	**4.329350**	0.495000	0.599181	53.205151	**9.282798**
shap	0.736986	**0.000000**	**0.000000**	**0.002500**	0.957153	**98.339161**	7.097326

--- bin ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.851018	**0.000000**	**0.000000**	**0.012500**	**0.501807**	98.102482	9.678695
gradcam	**0.624585**	16.750000	2.458265	0.645000	0.262752	37.184366	**5.513788**
lime	0.834633	**22.750000**	**10.066187**	**0.822500**	**0.209662**	**21.224098**	**9.733605**
shap	**0.851762**	**0.000000**	**0.000000**	**0.012500**	0.486988	**98.107902**	9.707996

--- minmax ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.824637	**3.250000**	**2.295471**	0.117500	**0.038908**	88.139321	**10.371981**
gradcam	**0.553362**	1.250000	0.568341	0.272500	0.331609	76.072015	10.168424
lime	0.772891	2.500000	0.969162	**0.275000**	**0.402839**	**75.501471**	**10.055631**
shap	**0.844402**	**0.000000**	**0.000000**	**0.032500**	0.066837	**97.179150**	10.367339

--- topK_5 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.766804	**0.000000**	**0.000000**	**0.020000**	**0.949973**	97.426624	**7.380256**
gradcam	**0.077781**	**0.000000**	**0.000000**	0.062500	0.948867	95.579716	7.401766
lime	0.266320	**2.000000**	**1.103010**	**0.170000**	**0.917428**	**84.912728**	**7.843242**
shap	**0.824963**	**0.000000**	**0.000000**	**0.020000**	**0.949973**	**97.573005**	7.380256

--- topK_30 ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.850516**	**0.000000**	**0.000000**	**0.012500**	**0.700006**	98.061626	**9.171495**
gradcam	**0.383433**	1.750000	0.702444	0.255000	0.698868	78.844232	9.175269
lime	0.676907	**6.000000**	**2.684843**	**0.387500**	**0.673884**	**64.779027**	**9.252643**
shap	0.848558	**0.000000**	**0.000000**	**0.012500**	0.700006	**98.169867**	9.171495

--- sigmoid ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.596879	**6.000000**	**3.488200**	**0.572500**	**0.000517**	**51.145902**	**10.375488**
gradcam	0.558418	**3.000000**	**1.595462**	0.535000	**0.023324**	57.186894	**10.374343**
lime	**0.598701**	3.250000	1.934571	0.502500	0.015792	56.989645	10.374776
shap	**0.506164**	**3.000000**	1.742738	**0.487500**	0.001007	**61.328933**	10.375487

--- sigmoid_pos ---

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.560616	**4.750000**	**2.694025**	**0.545000**	**0.000259**	**54.838752**	**10.375489**
gradcam	0.565542	3.500000	1.996931	0.542500	**0.016902**	56.205008	**9.492769**
lime	**0.596822**	**3.250000**	1.912979	0.505000	0.014285	57.145403	10.374840
shap	**0.507642**	**3.250000**	**1.760654**	**0.487500**	0.000519	**61.117844**	10.375488

```
--- pos_thresh_75 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.023657	**0.000000**	**0.000000**	0.025000	0.998631	97.021990	**1.284587**
gradcam	0.182597	**0.000000**	**0.000000**	0.135000	**0.779157**	89.195469	7.443469
lime	**0.331308**	**2.250000**	**1.468846**	**0.195000**	0.880057	**81.639244**	**8.071825**
shap	**0.002502**	**0.000000**	**0.000000**	**0.017500**	**0.998952**	**97.195290**	1.867501

In [52]:
```
display_experiment_results(mask_experiment_results["cnn14_logmel"]["horse"])
```

```
--- topK_50_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.790323	19.250000	0.007534	0.490000	**0.256250**	49.701692	**4.962200**
gradcam	**0.668687**	16.750000	0.851790	0.522500	0.343045	50.511042	6.658016
lime	0.764370	**19.750000**	**9.932483**	**0.655000**	0.439142	**38.065049**	8.974500
shap	**0.790697**	**0.250000**	**0.000001**	**0.005000**	**0.498750**	**96.701207**	**9.658136**

```
--- topK_30_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.788420**	**0.000000**	**0.000000**	**0.002500**	**0.700006**	**97.230655**	9.171495
gradcam	**0.456246**	8.750000	0.002277	0.285000	**0.576740**	73.302948	**7.569022**
lime	0.662887	**14.750000**	**8.590946**	**0.405000**	0.672999	**59.581706**	**9.227538**
shap	0.783312	**0.000000**	**0.000000**	0.005000	**0.700006**	97.136149	9.171495

```
--- minmax_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.769024**	0.250000	0.228765	0.067500	**0.774734**	92.016089	**9.143446**
gradcam	**0.503738**	0.750000	0.092385	0.147500	**0.489186**	88.137892	9.195824
lime	0.699502	**6.750000**	**4.104590**	**0.262500**	0.604543	**75.048172**	**9.633056**
shap	0.753468	**0.000000**	**0.000000**	**0.007500**	0.727941	**97.820285**	9.333287

```
--- topK_5_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.695200	**0.500000**	0.155136	**0.012500**	**0.949973**	**95.898839**	7.380256
gradcam	**0.118517**	3.750000	**0.000537**	0.100000	**0.884974**	90.037609	**6.899170**
lime	0.273862	**4.500000**	**2.608519**	**0.205000**	0.916421	**82.605794**	**7.849365**
shap	**0.731777**	**0.500000**	0.035973	0.022500	**0.949973**	95.778591	7.380256

```
--- pos_thresh_50 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.107027	**0.500000**	0.203184	**0.010000**	**0.998757**	97.487749	**3.272373**
gradcam	0.449253	2.000000	0.546866	0.235000	**0.606197**	80.000784	**8.682833**
lime	**0.527689**	**10.250000**	**6.915780**	**0.317500**	0.789854	**70.807660**	8.659089
shap	**0.105702**	**0.500000**	**0.183802**	0.017500	0.996972	**97.933303**	4.249547

```
--- topK_50 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.789539	**0.000000**	**0.000000**	**0.002500**	**0.500000**	**96.983300**	**9.682342**
gradcam	**0.612718**	3.750000	1.824735	0.307500	0.499043	71.618280	9.684251
lime	0.760747	**21.750000**	**12.180873**	**0.640000**	**0.476016**	**39.704406**	**9.728505**
shap	**0.790343**	**0.000000**	**0.000000**	**0.002500**	**0.500000**	96.830049	9.682342

```
--- pos_thresh_25 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.386120**	1.000000	0.463934	**0.007500**	**0.989099**	**97.536813**	**5.682875**
gradcam	0.575466	7.750000	1.807158	0.435000	**0.437871**	59.357193	8.634937
lime	**0.703865**	**15.500000**	**10.398968**	**0.512500**	0.627666	**50.686515**	**9.279216**
shap	0.566562	**0.250000**	**0.056329**	0.025000	0.961684	96.388800	6.980273

```
--- bin ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.789483	**0.000000**	**0.000000**	**0.002500**	**0.499990**	**96.975555**	9.682347
gradcam	**0.646846**	13.750000	2.481985	0.595000	0.311681	42.425838	**6.834141**
lime	0.780193	**40.000000**	**20.360500**	**0.827500**	**0.291061**	**16.939316**	**9.829493**
shap	**0.790175**	**0.000000**	**0.000000**	0.005000	0.488257	96.767103	9.705524

```
--- minmax ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.774518	**10.750000**	**7.401402**	0.277500	**0.040483**	72.553143	**10.371809**
gradcam	**0.665791**	2.250000	0.614114	0.255000	0.302349	78.446919	10.195314
lime	0.730194	10.250000	6.102790	**0.382500**	**0.368780**	**65.278803**	**10.106139**
shap	**0.788614**	**0.500000**	**0.111171**	**0.017500**	0.067695	**97.039444**	10.367169

```
--- topK_5 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.695200	0.500000	0.155136	**0.012500**	**0.949973**	95.898839	**7.380256**
gradcam	**0.093737**	**0.250000**	**0.023225**	0.037500	0.948990	**96.102285**	7.399404
lime	0.273862	**4.500000**	**2.608519**	**0.205000**	**0.916421**	**82.605794**	**7.849365**
shap	**0.731777**	0.500000	0.035973	0.022500	**0.949973**	95.778591	7.380256

```
--- topK_30 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.788420**	**0.000000**	**0.000000**	**0.002500**	**0.700006**	**97.230655**	**9.171495**
gradcam	**0.393378**	0.500000	0.110620	0.142500	0.699018	87.259372	9.174775
lime	0.662933	**14.500000**	**8.590932**	**0.402500**	**0.674724**	**59.821911**	**9.250549**
shap	0.783312	**0.000000**	**0.000000**	0.005000	**0.700006**	97.136149	9.171495

```
--- sigmoid ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	**0.611014**	3.500000	**1.996095**	**0.555000**	**0.000539**	**56.130944**	**10.375488**
gradcam	0.586694	**1.000000**	**0.272882**	0.445000	**0.045033**	66.063212	**10.371287**
lime	0.600107	**4.000000**	1.709758	0.497500	0.018723	61.679100	10.374649
shap	**0.524772**	2.000000	0.652221	**0.415000**	0.001090	**68.324628**	10.375487

```
--- sigmoid_pos ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.575920	**3.000000**	1.416806	**0.512500**	**0.000269**	**61.363719**	**10.375489**
gradcam	0.594669	2.250000	**0.595393**	0.470000	**0.024390**	63.589368	**9.907195**
lime	**0.599394**	2.750000	**1.428018**	0.480000	0.015101	62.498017	10.374842
shap	**0.526666**	**2.000000**	0.657394	**0.422500**	0.000559	**68.180132**	10.375488

```
--- pos_thresh_75 ---
```

	FF	AI	AG	FidIn	SPS	AD	COMP
saliency	0.021554	**0.000000**	**0.000000**	**0.012500**	0.998796	96.980906	**1.429625**
gradcam	0.251565	0.500000	0.216440	0.075000	**0.799444**	92.968666	7.877564
lime	**0.337981**	**5.250000**	**3.795244**	**0.232500**	0.889431	**80.521404**	**8.004952**
shap	**0.003826**	**0.000000**	**0.000000**	0.020000	**0.998917**	**97.433498**	1.839846

Summary tables

In [53]:

```python
def _metric_columns(df):
    return [c for c in df.columns if pd.api.types.is_numeric_dtype(df[c])]

def _collect_metric_dfs(results_dict):
    dfs = []
    for _, exps in results_dict.items():
        for _, df in exps.items():
            cols = _metric_columns(df)
            if cols:
                dfs.append(df[cols].astype(float))
    return dfs

def compute_global_minmax_from_results(results_dict, numeric_cols=None,
                                       robust=False, q_low=0.01, q_high=0.99):
    dfs = _collect_metric_dfs(results_dict)
    all_cols = set()
    for df in dfs: all_cols |= set(df.columns)
    if numeric_cols is not None:
        all_cols &= set(numeric_cols)
    mins, maxs = {}, {}
    for c in sorted(all_cols):
        vals = []
        for df in dfs:
            if c in df.columns:
                vals.append(pd.to_numeric(df[c], errors="coerce").values)
        if not vals:
            continue
        v = np.concatenate(vals)
        v = v[np.isfinite(v)]
        if v.size == 0:
            mins[c], maxs[c] = 0.0, 1.0
            continue
        if robust:
            lo, hi = np.quantile(v, [q_low, q_high])
        else:
            lo, hi = float(np.min(v)), float(np.max(v))
        if not np.isfinite(lo) or not np.isfinite(hi) or hi <= lo:
            lo, hi = 0.0, 1.0
        mins[c], maxs[c] = float(lo), float(hi)
    return {"mins": mins, "maxs": maxs}

def normalize_with_global_stats(df, stats):
    df = df.copy()
    mins, maxs = stats["mins"], stats["maxs"]
    for c in df.columns:
        if pd.api.types.is_numeric_dtype(df[c]) and c in mins:
            lo, hi = mins[c], maxs[c]
            x = pd.to_numeric(df[c], errors="coerce")
            df[c] = ((x - lo) / (hi - lo)).clip(0, 1).fillna(0.0)
    return df

def normalize_then_invert_with_global_stats(df, stats, invert_cols=("COMP","AD")):
    df = normalize_with_global_stats(df, stats)
    for c in invert_cols:
        if c in df.columns:
            df[c] = 1.0 - df[c]
    return df

def _composite_score(df01, agg="geometric", weights=None,
                     trim_q=0.2, alpha=0.3,
                     tau=0.6, k_min=2, eps=1e-9):
    M = df01.copy()
    cols = list(M.columns)
    w = np.array([weights.get(c, 1.0) if weights else 1.0 for c in cols], dtype=float)
    w = w / (w.sum() if w.sum() > 0 else 1.0)

    if agg == "geometric":
        return np.exp(np.log(M.clip(eps, 1)).mul(w, axis=1).sum(axis=1))

    elif agg == "trimmed_mean":
        q = max(0.0, min(0.49, float(trim_q)))
        def _tm(row):
            vals = np.repeat(row.values, np.maximum((w*1000).astype(int), 1))
            low = np.quantile(vals, q)
            high = np.quantile(vals, 1-q)
            keep = vals[(vals >= low) & (vals <= high)]
            return float(keep.mean()) if keep.size else float(row.mean())
        return M.apply(_tm, axis=1)

    elif agg == "mean_minus_std":
        mu = (M * w).sum(axis=1)
        var = ((M.sub(mu, axis=0))**2 * w).sum(axis=1)
        sd = np.sqrt(var.clip(0, None))
        return mu - float(alpha) * sd
```

```
    elif agg == "thresholded_mean":
        def _th(row):
            mask = row >= float(tau)
            if mask.sum() >= int(k_min):
                return float(row[mask].mean())
            return float(row.mean() * 0.5)
        return M.apply(_th, axis=1)

    elif agg == "rank_mean":
        ranks = M.rank(axis=0, method="average")
        n = len(M)
        norm = 1 - (ranks - 1) / (n - 1 if n > 1 else 1)
        return (norm * w).sum(axis=1)

    else:
        return (M * w).sum(axis=1)

def build_method_exp_index(results_dict):
    idx = defaultdict(lambda: defaultdict(dict))
    for model, exps in results_dict.items():
        for exp_name, df in exps.items():
            if "_" in exp_name:
                method, exp = exp_name.split("_", 1)
            else:
                method, exp = exp_name, "exp"
            idx[model][exp][method] = df
    return idx

def summarize_best_masks_by_experiment(results_dict,
                                       invert_cols=("COMP","AD"),
                                       known_methods=None, global_stats=None,
                                       robust=False, q_low=0.01, q_high=0.99,
                                       return_normalized=False,
                                       score_agg="geometric", score_weights=None,
                                       trim_q=0.2, alpha=0.3, tau=0.6, k_min=2):
    if global_stats is None:
        global_stats = compute_global_minmax_from_results(
            results_dict, robust=robust, q_low=q_low, q_high=q_high
        )

    idx = build_method_exp_index(results_dict)
    summaries = defaultdict(dict)

    for model, exp_dict in idx.items():
        for exp, methods in exp_dict.items():
            rows = []
            method_list = list(methods.keys())
            if known_methods:
                method_list = [m for m in known_methods if m in methods]

            for m in method_list:
                df = methods[m]
                metrics = _metric_columns(df)
                if not metrics:
                    continue

                df_raw = df[metrics].astype(float)

                df_scored = normalize_then_invert_with_global_stats(
                    df_raw, global_stats, invert_cols=invert_cols
                )

                mean_score = _composite_score(
                    df_scored,
                    agg=score_agg,
                    weights=score_weights,
                    trim_q=trim_q,
                    alpha=alpha,
                    tau=tau,
                    k_min=k_min
                )

                best_idx = mean_score.idxmax()

                out = {
                    "method": m,
                    "best_mask": best_idx,
                    "mean_score": float(mean_score.loc[best_idx]),
                }

                src = df_raw if not return_normalized else df_scored
                for c in metrics:
                    out[c] = float(src.loc[best_idx, c])

                rows.append(out)
```

```
            summaries[model][exp] = (
                pd.DataFrame(rows)
                  .sort_values("mean_score", ascending=False, ignore_index=True)
            )
    return summaries, global_stats

def display_summary_table(df, title=None, drop_best_mask_col=False):
    method_order = ["saliency", "gradcam", "lime", "shap"]

    if "method" in df.columns:
        df = df.set_index("method")

    if "best_mask" in df.columns:
        df.index = [f"{m}_{bm}" for m, bm in zip(df.index, df["best_mask"])]
        if drop_best_mask_col:
            df = df.drop(columns=["best_mask"])

    ordered_idx = []
    for m in method_order:
        ordered_idx.extend([idx for idx in df.index if idx.split("_", 1)[0] == m])
    ordered_idx = [idx for idx in ordered_idx if idx in df.index]
    if ordered_idx:
        df = df.loc[ordered_idx]

    if "column_order" in globals():
        cols = [c for c in column_order if c in df.columns]
        if "mean_score" in df.columns and "mean_score" not in cols:
            cols = cols + ["mean_score"]
        df = df.reindex(columns=cols)

    styler = df.style
    if "highlight_extremes" in globals():
        styler = styler.apply(highlight_extremes, axis=0)

    if title:
        print(f"\n=== {title} ===")
    display(styler)
```

In [54]:
```
summaries_v2, global_stats = summarize_best_masks_by_experiment(
    results_dict=experiment_results,
    invert_cols=("COMP","AD"),
    known_methods=method_names,
    robust=False, q_low=0.01, q_high=0.99,
    return_normalized=False,
    score_agg="geometric"
)

for model, exps in summaries_v2.items():
    print(f"\n==================== MODEL: {model} ====================")
    for exp, df in exps.items():
        display_summary_table(df, title=f"--- Experiment: {exp} ---")
```

```
==================== MODEL: cnn14_logstft ====================

=== --- Experiment: clean --- ===
```

	FF	AI	AG	FidIn	SPS	AD	COMP	mean_score
saliency_topK_50_pos	**0.804243**	21.250000	**0.005357**	0.515000	0.246247	48.376074	5.221556	0.177141
gradcam_topK_50_pos	**0.724579**	24.750000	0.217910	**0.702500**	**0.224974**	**31.075000**	**4.771012**	0.329445
lime_bin	0.790285	**26.000000**	**14.205455**	0.685000	0.272667	32.028679	**10.931619**	**0.412818**
shap_topK_50_pos	0.802137	**3.750000**	0.377866	**0.117500**	**0.448744**	**88.001432**	9.515425	**0.149945**

```
==================== MODEL: cnn14_logmel ====================

=== --- Experiment: clean --- ===
```

	FF	AI	AG	FidIn	SPS	AD	COMP	mean_score
saliency_topK_50_pos	**0.923509**	17.000000	**0.010820**	0.660000	0.173750	34.228729	**3.364614**	0.205340
gradcam_bin	0.718901	19.500000	2.312055	0.782500	0.195505	24.363625	4.918478	0.448234
lime_bin	0.899183	**28.750000**	**12.359402**	**0.932500**	**0.200351**	**8.067020**	9.534232	**0.547542**
shap_sigmoid	**0.411541**	**1.750000**	0.706020	**0.635000**	**0.001600**	**45.859315**	**10.375483**	**0.086768**

```
=== --- Experiment: white --- ===
```

	FF	AI	AG	FidIn	SPS	AD	COMP	mean_score
saliency_topK_50_pos	**0.711190**	32.500000	**0.009746**	0.745000	0.127500	25.342996	**2.468997**	0.215265
gradcam_bin	0.526246	15.750000	2.547937	0.510000	**0.291736**	49.573783	5.396175	0.391248
lime_bin	0.698812	**34.250000**	**9.174560**	**0.802500**	0.187839	**19.663277**	8.035213	**0.538865**
shap_sigmoid	**0.479692**	**5.000000**	1.995513	**0.380000**	**0.001059**	**69.050048**	**10.375487**	**0.096004**

```
=== --- Experiment: room --- ===
```

	FF	AI	AG	FidIn	SPS	AD	COMP	mean_score
saliency_topK_50_pos	**0.850689**	**27.250000**	**0.010742**	0.685000	0.157500	31.044639	**3.049938**	0.217687
gradcam_bin	0.624585	16.750000	2.458265	0.645000	**0.262752**	37.184366	5.513788	0.422272
lime_bin	0.834633	22.750000	**10.066187**	**0.822500**	0.209662	**21.224098**	9.733605	**0.483431**
shap_sigmoid	**0.506164**	**3.000000**	1.742738	**0.487500**	**0.001007**	**61.328933**	**10.375487**	**0.093804**

```
=== --- Experiment: horse --- ===
```

	FF	AI	AG	FidIn	SPS	AD	COMP	mean_score
saliency_minmax	0.774518	10.750000	7.401402	**0.277500**	0.040483	**72.553143**	10.371809	0.220737
gradcam_bin	0.646846	13.750000	2.481985	0.595000	**0.311681**	42.425838	**6.834141**	0.398163
lime_bin	**0.780193**	**40.000000**	**20.360500**	**0.827500**	0.291061	**16.939316**	9.829493	**0.601190**
shap_sigmoid	**0.524772**	**2.000000**	**0.652221**	0.415000	**0.001090**	68.324628	**10.375487**	**0.074229**

Saving results

In [55]:

```
os.makedirs("supplementary", exist_ok=True)
output_dir = os.path.join("supplementary", "exported_csvs")
os.makedirs(output_dir, exist_ok=True)

for model_type, exps in experiment_results.items():
    for exp_name, df in exps.items():
        fname = f"{model_type}_{exp_name}.csv"
        df.to_csv(os.path.join(output_dir, fname), index=True)

for model_type, exps in mask_experiment_results.items():
    for exp_type, masks in exps.items():
        for mask_name, df in masks.items():
            fname = f"{model_type}_{exp_type}_{mask_name}.csv"
            df.to_csv(os.path.join(output_dir, fname), index=True)

path_exported_true = os.path.join("supplementary", "exported_true")
path_exported_false = os.path.join("supplementary", "exported_false")
os.makedirs(path_exported_true, exist_ok=True)
os.makedirs(path_exported_false, exist_ok=True)

for model in model_types:
    for exp_name, df_t in experiment_results_true[model].items():
        df_t.to_csv(os.path.join(path_exported_true, f"{model}_{exp_name}_true.csv"), index=True)
    for exp_name, df_f in experiment_results_false[model].items():
        df_f.to_csv(os.path.join(path_exported_false, f"{model}_{exp_name}_false.csv"), index=True)
```