In [11]:
```
%matplotlib widget

from mpl_toolkits.mplot3d import Axes3D  # noqa: F401 unused import

import matplotlib.pyplot as plt
from matplotlib import cm

import numpy as np
from alg import *
from experimentCode import *
from statsmodels.stats.proportion import proportion_confint

import pandas as pd
import pickle as pk
```

In [43]:
```
def asnp(series):
    return np.asarray(series.values, dtype = "float")
def f(e,m):
    n = m ** e
    return 1 - 2*(m**2 - m) * np.exp(-1 * n/(8 * (m ** 2)))
```

In [14]:
```
df = combine()
df.shape
```

Out[14]:
```
(137, 4)
```

In [15]:
```
df.columns
```

Out[15]:
```
Index(['v_exp', 'candidates', 'success', 'trials'], dtype='object')
```

In [58]:
```
dfp= df.loc[]
```

In [59]:
```
dfp.candidates.unique()
```

Out[59]:
```
array([  5,  10,  20,  30,  40, 100,  50,  60,  70,  85])
```

In [63]:
```
plt.close('all')

fig = plt.figure()
fig.set_size_inches(6, 6)

ax = fig.add_subplot(111, projection='3d')


#ax.scatter(asnp(dfp['v_exp']), asnp(dfp['candidates']),
              #  asnp(dfp['success']), cmap=cm.viridis)

for c in dfp.candidates.unique():
    p = dfp.loc[dfp['candidates'] == c]
    p.sort_values(['v_exp', 'success'], inplace=True)
    ax.plot(asnp(p['v_exp']), asnp(p['candidates']), asnp(p['success']))
    error bars
    #ax.plot([fx[i], fx[i]], [fy[i], fy[i]], [fz[i]+zerror[i], fz[i]-zerror[i]], ma
rker="_")

exponent = np.linspace(1.5,2.5,9)
m = np.arange(5, 100)
exponent, m = np.meshgrid(exponent, m)

z = f(exponent,m)
#z[z < 0.0] = np.nan

#ax.plot_surface(exponent, m, z)

ax.set_title('GreedyWinner Algorithm')

ax.set_xlabel('$\log_m(n)$')
ax.set_ylabel('Candidates')
ax.set_zlabel('Success Probability')
#ax.set_zlim3d(0,1)

plt.show()
```

```
<ipython-input-63-0966e1c51ade>:14: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stab
le/user_guide/indexing.html#returning-a-view-versus-a-copy
  p.sort_values(['v_exp', 'success'], inplace=True)
<ipython-input-63-0966e1c51ade>:14: SettingWithCopyWarning:
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le/user_guide/indexing.html#returning-a-view-versus-a-copy
  p.sort_values(['v_exp', 'success'], inplace=True)
```

In [4]:
```
proportion_confint(100, 200, alpha=0.05, method='agresti_coull')
```

Out[4]:
```
(137, 4)
```

In [33]:
```
np.linspace(1.5,2.5,9)
```

Out[33]:
```
array([1.5  , 1.625, 1.75 , 1.875, 2.   , 2.125, 2.25 , 2.375, 2.5  ])
```

In [ ]:
```

```