Week5Prob

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%matplotlib ipympl

import numpy as np
import matplotlib.pyplot as plt
from matplotlib.animation import FuncAnimation

fig, ax=plt.subplots()
xdata, ydata=[], []
ln,=ax.plot([], [],'r')


def morph(x1, y1, x2, y2, alpha):
    xm=alpha*x2+(1-alpha)*x1
    ym=alpha*y2+(1-alpha)*y1
    return xm, ym


def polygon(n):
    t=840
    xp=[]
    yp=[]
    a=2*(np.pi)*1/n

    for i in range(n):
        xp.extend(np.linspace(1*np.cos(i*(a)),1*np.cos((i+1)*(a)),int(t/n)))

    for i in range(n):
        yp.extend(np.linspace(1*np.sin(i*(a)),1*np.sin((i+1)*(a)),int(t/n)))

    x=np.array(xp)
    y=np.array(yp)
    return x, y


def init():
    ax.set_xlim(-1.2,1.2)
    ax.set_ylim(-1.2,1.2)
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    return ln,


def update(frame):
    if frame>=0 and frame<1:
        x1, y1= polygon(3)
        x2, y2= polygon(4)
        xdata, ydata=morph(x1, y1, x2, y2, frame)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=1 and frame<2:
        x1, y1= polygon(4)
        x2, y2= polygon(5)
        xdata, ydata=morph(x1, y1, x2, y2, frame-1)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=2 and frame<3:
        x1, y1= polygon(5)
        x2, y2= polygon(6)
        xdata, ydata=morph(x1, y1, x2, y2, frame-2)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=3 and frame<4:
        x1, y1= polygon(6)
        x2, y2= polygon(7)
        xdata, ydata=morph(x1, y1, x2, y2, frame-3)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=4 and frame<5:
        x1, y1= polygon(7)
        x2, y2= polygon(8)
        xdata, ydata=morph(x1, y1, x2, y2, frame-4)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=6 and frame<7:
        x1, y1= polygon(8)
        x2, y2= polygon(7)
        xdata, ydata=morph(x1, y1, x2, y2, frame-6)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=7 and frame<8:
        x1, y1= polygon(7)
        x2, y2= polygon(6)
        xdata, ydata=morph(x1, y1, x2, y2, frame-7)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=8 and frame<9:
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        x1, y1= polygon(6)
        x2, y2= polygon(5)
        xdata, ydata=morph(x1, y1, x2, y2, frame-8)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=9 and frame<10:
        x1, y1= polygon(5)
        x2, y2= polygon(4)
        xdata, ydata=morph(x1, y1, x2, y2, frame-9)
        ln.set_data(xdata, ydata)
        return ln,
    elif frame>=10 and frame<11:
        x1, y1= polygon(4)
        x2, y2= polygon(3)
        xdata, ydata=morph(x1, y1, x2, y2, frame-10)
        ln.set_data(xdata, ydata)
        return ln,

ani=FuncAnimation(fig, update, frames=np.linspace(0,11,440),init_func=init,␣
 ↪blit=True, interval=25, repeat=True)
plt.show()
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