What is claimed is:

1. ____A method for generating a mesh deformation of a facial model, the method comprising:

generating a first plurality of deformation maps by applying a first plurality of neural network-trained models;

generating a second plurality of deformation maps by applying a second plurality of neural network-trained models, the second plurality of deformation maps having a resolution greater than the first plurality of deformation maps;

extracting a first plurality of vertex offsets based on the first plurality of deformation maps; ~~and~~

extracting a second plurality of vertex offsets based on the second plurality of deformation maps; and

applying the first plurality of vertex offsets and the second plurality of vertex offsets to a ~~neutral~~ mesh of the facial model to generate the mesh deformation of the facial model.

2. -___The method of- claim 1, wherein extracting the first plurality of vertex offsets comprises performing an interpolation of at least one of the first plurality of deformation maps at a plurality of vertex positions.

3. -___The method of- claim 2, wherein the interpolation comprises a bilinear interpolation or a cubic interpolation.

4. -___The method of- claim 1, wherein applying the first plurality of vertex offsets and the second plurality of vertex offsets to the ~~neutral~~ mesh of the facial model comprises adding the first plurality of vertex offsets to values of a plurality of vertices of the ~~neutral~~ mesh.

5. -___The method of- claim 1, wherein each of the first plurality of neural network-trained models comprises a convolutional neural network (CNN) model.

6. ____The method of- claim 1, ~~further comprising~~wherein:

~~generating a second plurality of deformation maps by applying a second plurality of neural network-trained models, the second plurality of deformation maps having a resolution greater than the first plurality of deformation maps;~~

~~extracting a second plurality of vertex offsets based on the second plurality of deformation maps; and~~

applying the first plurality of vertex offsets and the second plurality of vertex offsets to the ~~neutral mesh of the facial model to generate the mesh deformation of the facial model.~~

~~7. The method of claim 6, wherein:~~

~~applying the first plurality of vertex offsets to the neutral~~ mesh comprises~~:~~

applying the first plurality of vertex offsets to values of all vertices of the ~~neutral~~ mesh; and

~~applying the second plurality of vertex offsets to the neutral mesh comprises~~ applying the second plurality of vertex offsets to values of at most a subset of the vertices of the ~~neutral~~ mesh to generate the mesh deformation.

7.

~~8.~~ The method of~~-~~ claim ~~7~~6, wherein the subset of the vertices of the ~~neutral~~ mesh corresponds to one or more regions of the ~~neutral~~ mesh exhibiting a level of approximation error that is above a particular threshold.

~~9.~~

8. The method of~~-~~ claim ~~6~~1, wherein:

applying the first plurality of vertex offsets and the second plurality of vertex offsets to the ~~neutral~~ mesh of the facial model comprises~~:~~

adding the first plurality of vertex offsets to values of a plurality of vertices of the ~~neutral~~ mesh to generate a plurality of intermediary vertex values; and

~~applying the second plurality of vertex offsets to the neutral mesh comprises~~ adding the second plurality of vertex offsets to at most a subset of the plurality of intermediary vertex values to generate the mesh deformation.

9. ~~10.~~ The method of~~-~~ claim ~~6~~1, further comprising:

based on the first plurality of deformation maps and the second plurality of deformation maps, identifying one or more rigid mesh segments of the facial model that move rigidly during deformation; and

performing a separate approximation of each of the one or more rigid mesh segments.

10. ~~11.~~ The method of ~~claim~~ claim ~~10~~9, wherein performing the separate approximation of each of the one or more rigid mesh segments comprises performing a rigid rotation and translation for vertices of the rigid mesh segment.

11. ~~12.~~ A system for generating a mesh deformation of a facial model, the system comprising one or more ~~controllers~~processors configured to:

generate a first plurality of deformation maps by applying a first plurality of neural network-trained models;

generate a second plurality of deformation maps by applying a second plurality of neural network-trained models, the second plurality of deformation maps having a resolution greater than the first plurality of deformation maps;

extract a first plurality of vertex offsets based on the first plurality of deformation maps; ~~and~~

extract a second plurality of vertex offsets based on the second plurality of deformation maps; and

apply the first plurality of vertex offsets and the second plurality of vertex offsets to a ~~neutral~~ mesh of the facial model to generate the mesh deformation of the facial model.

12. ~~13.~~ The system of ~~claim~~ claim ~~12~~11, wherein the one or more ~~controllers~~processors are further configured to extract the first plurality of vertex offsets by performing an interpolation of at least one of the first plurality of deformation maps at a plurality of vertex positions.

13. ~~14.~~ The system of ~~claim~~ claim ~~13~~12, wherein the interpolation comprises a bilinear interpolation or a cubic interpolation.

14. ~~15.~~ The system of ~~claim~~ claim ~~12~~11, wherein the one or more ~~controllers~~processors are further configured to apply the first plurality of vertex offsets and the second plurality of vertex offsets to the ~~neutral~~ mesh of the facial model by adding the first plurality of vertex offsets to values of a plurality of vertices of the ~~neutral~~ mesh.

15. ~~16.~~ The system of ~~claim~~ claim ~~12~~11, wherein each of the first plurality of neural network-trained models comprises a convolutional neural network (CNN) model.

16. ~~17.~~ The system of ~~claim 12~~11, wherein~~:~~

the one or more ~~controllers~~processors are further configured to~~:~~

~~generate a second plurality of deformation maps by applying a second plurality of neural network-trained models, the second plurality of deformation maps having a resolution greater than the first plurality of deformation maps;~~

~~extract a second plurality of vertex offsets based on the second plurality of deformation maps; and~~

apply the first plurality of vertex offsets and the second plurality of vertex offsets to the ~~neutral~~ mesh ~~of the facial model to generate the mesh deformation of the facial model.~~by:

~~18. The system of claim 17, wherein:~~

~~the one or more controllers are further configured to apply the first plurality of vertex offsets to the neutral mesh by~~ applying the first plurality of vertex offsets to values of all vertices of the ~~neutral~~ mesh; and

~~the one or more controllers are further configured to apply the second plurality of vertex offsets to the neutral mesh by~~ applying the second plurality of vertex offsets to values of at most a subset of the vertices of the ~~neutral~~ mesh to generate the mesh deformation.

~~19.~~ 17. The system of ~~claim 18~~16, wherein the subset of the vertices of the ~~neutral~~ mesh corresponds to one or more regions of the ~~neutral~~ mesh exhibiting a level of approximation error that is above a particular threshold.

18. ~~20.~~ A machine-readable non-transitory medium having stored thereon machine-executable instructions for generating a mesh deformation of a facial model, the instructions comprising:

generating a first plurality of deformation maps by applying a first plurality of neural network-trained models;

generating a second plurality of deformation maps by applying a second plurality of neural network-trained models, the second plurality of deformation maps having a resolution greater than the first plurality of deformation maps;

extracting a first plurality of vertex offsets based on the first plurality of deformation maps;

extracting a second plurality of vertex offsets based on the second plurality of deformation maps; and

applying the first plurality of vertex offsets and the second plurality of vertex offsets to a ~~neutral~~ mesh of the facial model to generate the mesh deformation of the facial model.