CLAIMS

1. A capacitive sensor comprising:

a capacitive sensing circuit defining an output and including a plurality of electrodes;

a substrate overlying the capacitive sensing circuit for receipt of an object thereon; and

a processing unit electrically coupled to the capacitive sensing circuit and configured to detect placement of the object against the substrate based on the capacitive sensing circuit output as compared against a proximity threshold and based on the rate of change of the capacitive sensing circuit output as compared against a low setpoint value and a high setpoint value, wherein the capacitive sensing circuit output is based on the capacitive coupling ~~self-capacitance~~ of at least two of the plurality of electrodes.

2. The capacitive sensor of claim 1 wherein the capacitive sensing circuit includes a sampling capacitor electrically coupled to the processing unit.

3. The capacitive sensor of claim 1 wherein the plurality of electrodes include a sense electrode and a bias electrode spaced apart from the sense electrode.

4. The capacitive sensor of claim 1 wherein the plurality of electrodes include a sense electrode and a strobe electrode spaced apart from the sense electrode.

5. The capacitive sensor of claim 1 wherein the processing unit is a time domain differential processing circuit configured to determine the rate of change of the capacitive sensing circuit output.

~~6. The capacitive sensor of claim 3 wherein the time domain differential processing circuit is adapted to determine a touch signature based on the rate of change of the capacitive sensor circuit output and at least one of a capacitive value and a time domain.~~

6~~7~~. A capacitive sensor comprising:

a substrate for receiving a touch input thereon;

an electrode subjacent the substrate and including a capacitance adapted to vary in response to the touch input; and

a processing unit coupled to the electrode and adapted to determine a signature of the touch input based on the electrode capacitance as compared against a proximity threshold and based on a rate of change of the electrode capacitance as compared against a low setpoint value and a high setpoint value, wherein the signature includes variations in the electrode capacitance corresponding to movement of a touch input generally perpendicular to the substrate and against the substrate with varying degrees of pressure.

78. The capacitive sensor of claim 67 wherein the processing unit is adapted to measure the rate of change of the electrode capacitance over a first time domain to determine the signature of the touch input.

89. The capacitive sensor of claim 78 wherein the processing unit is adapted to measure the rate of change of the electrode capacitance over a second time domain to determine the signature of the touch input, the second time domain being greater than the first time domain.

910. The capacitive sensor of claim 67 wherein the processing unit is adapted to measure a change in the electrode capacitance relative to ground.

1011. The capacitive sensor of claim 67 wherein the touch signature includes fluid movement of an object toward the capacitive sensor.

1112. The capacitive sensor of claim 67 wherein the touch signature includes staggered movement of an object toward the capacitive sensor.

1213. The capacitive sensor of claim 67 wherein the touch signature includes fluid movement of an object toward and away from the capacitive sensor.

1314. The capacitive sensor of claim 67 wherein the touch signature includes staggered movement of an object toward and away from the capacitive sensor.

1415. The capacitive sensor of claim 67 wherein the touch signature includes a flattening of the touch input against the substrate.

1516. A method comprising:

providing a substrate for receiving a touch input thereon and a plurality of electrodes subjacent the substrate including electrode rows and electrode columns;

measuring the capacitance of at least one of the plurality of electrodes over a time interval;

measuring the rate of change of the capacitance of the at least one of the plurality of electrodes over the time interval; and

~~determining the presence of a stimulus~~ detecting a touch signature based on the measured capacitance as compared against a proximity threshold and based on the measured rate of change of capacitance as compared against a setpoint value, wherein the touch signature includes a flattening of the touch input against the substrate with varying degrees of pressure.

1617. The method according to claim 1516 wherein the measuring steps include~~s~~:

strobing one of the electrode rows; and

sampling the voltage on an adjacent electrode row.

1718. The method according to claim 1620 wherein the measuring steps include~~s~~:

strobing one of the electrode columns; and

sampling the voltage on an adjacent electrode column.

1819. The method according to claim 1516 wherein the measuring steps include~~s~~:

strobing one of the electrode rows; and

sampling the voltage on at least one of the electrode columns.

1920. The method according to claim 1819 wherein the measuring steps include~~s~~:

strobing one of the electrode columns; and

sampling the voltage on at least one of the electrode rows.

2021. The method according to claim 1516 wherein at least two of the electrode rows define a first mutual capacitance, the method further including measuring the rate of change of the first mutual capacitance.

2122. The method according to claim 2021 wherein at least two of the electrode columns define a second mutual capacitance, the method further including measuring the rate of change of the second mutual capacitance.