**OpenKSK Data Formats**

**K-Sketch 1.0**

1. Matrices
2. Normalized ink
3. MS ink
4. **Matrices**

Matrices are 2×3 (i.e. homogenous 3×3) and stored as: m11, m12, m21, m22, m13, m23.

|  |  |  |
| --- | --- | --- |
| m11 | m12 | m13 |
| m21 | m22 | m23 |

1. **Normalized Ink Data**

|  |  |  |  |
| --- | --- | --- | --- |
| x (pixels) | y (pixels) | time (ms) | pressure (0-1024) |

We should work towards storing in this format. However, for converting to the MS format, use 96 DPI and an ink to device scale of (1, 1). For example, x pixels should be stored as x\*96 inches.

1. **Ink Data**

This section describes the MS ink format. All units and conversions are derived from a TabletPropertyMetrics objects, which is stored in the all\_tablet\_properties section of the OpenKSK file. There is also a scaling between ink and device coordinates, called the “ink to device” scale (x, y).

Each ink buffer is stored as an interleaved integer array (int[]). Each ink buffer could be stored in a different format, depending on the dimensions of the device. However, for simplicity we support two formats (corresponding to the mouse and pen respectively):

|  |  |  |
| --- | --- | --- |
| x | y | time |

|  |  |  |  |
| --- | --- | --- | --- |
| x | y | pressure | time |

The int[] is just a sequence of these frames.

The values in the array are in “ink” coordinates, which must must be mapped to “device” coordinates (read: pixels) according to the tablet metrics. Our tablet metrics are stored without any intelligible property names, so programs should determine the frame format by the number of dimensions (i.e. 3 or 4).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **value** | **range** | **units** | **conversion to normal form** | **notes** |
| x, y | 0 to unbounded | variable resolution per inch or cm | VALUE \* (ink to device scale) / (resolution in inches) \* DPI | assume 96 DPI |
| pressure | 0 to 1024 | unitless |  |  |
| time | 0 to unbounded | ms |  |  |