

## APPENDIX

### MATHEMATICA SOURCE CODE

```
(*Import data to Mathematica*)  
input = Import["d:/test.txt", "Table"];  
  
(*Show singular value, normalize of singular value and number of column of data  
input matrix, number of column = number of singular value*)  
{  
N[  
SingularValueList[  
input, {1, Length[SingularValueList[input]]}] //MatrixForm,  
Normalize[  
N[  
SingularValueList[  
input, {1, Length[SingularValueList[input]]}  
]] //MatrixForm,  
Length[SingularValueList[input]  
]}  
}
```

(\*Plot the data section\*)

```
{ListContourPlot[
  Reverse[input],
  Axes -> False, Frame -> False],
ListDensityPlot[
  Reverse[input], Axes -> False, Frame -> False]
}
```

(\*Plot and calculate the normalize of singular value\*)

```
Manipulate[
  BarChart[
    Normalize[
      N[SingularValueList[
        input, {1, SingularValueIndex}
      ]],
    ColorFunction -> Function[{height}, ColorData["Rainbow"]][height]],
    PerformanceGoal -> "Quality", Joined -> Automatic,
    ChartLabels -> {Table[a, {a, SingularValueIndex}]},
    {
      {SingularValueIndex, Length[SingularValueList[input]], "Singular Value
      Index 'i'"}, 1, Length[SingularValueList[input]], 1
    },
    FrameLabel -> {Singularvalueindex, RelativeMagnitune}
  ]
```

(\*filtering using singular value decomposition by select the  $p$  and  $q$  value\*)

Manipulate[

```
{
  {u, w, v} = SingularValueDecomposition[input, {p, q}];
  {
    ListContourPlot[
      Reverse[u.w.Transpose[v]],
      Axes -> False, Frame -> False],
    ListDensityPlot[
      Reverse[u.w.Transpose[v]],
      Axes -> False, Frame -> False]
  }
},
```

```
{p, 1, Length[SingularValueList[input]], 1},
```

```
{q, 1, Length[SingularValueList[input]], 1}
```

```
]
```

**CURRICULUM VITAE**

**Name:** Mr. Ukot Charayananda

**Date of Birth:** December 22, 1983

**Education History:**

2002 Senior High School at Mahidol Wittayanusorn School, Nakhon Pathom.

2007 Bachelor of Science Degree in Major of Physics, Chiang Mai University.

**Work Experience:**

November, 2007 - April, 2008

Seismic reflection survey in Mae Sot, Tak province.

March - April, 2009

Summer training on 3D seismic reflection survey in Kalasin province with CGG Veritas.