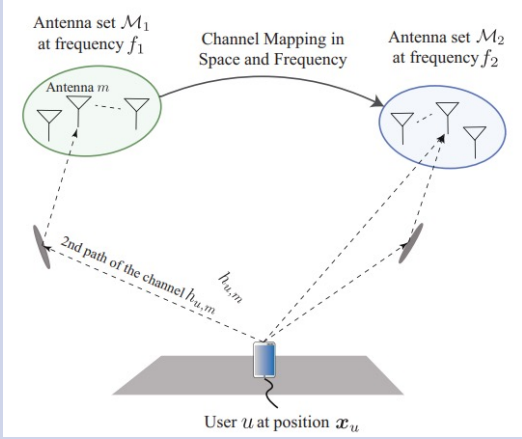
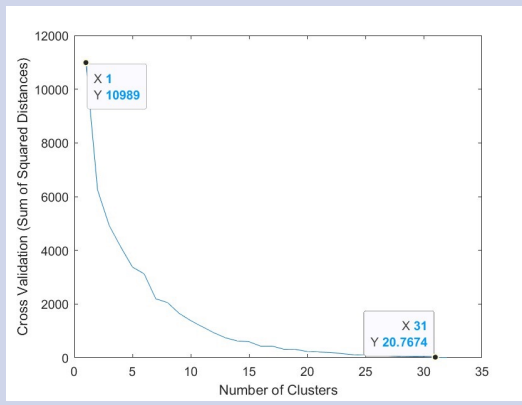
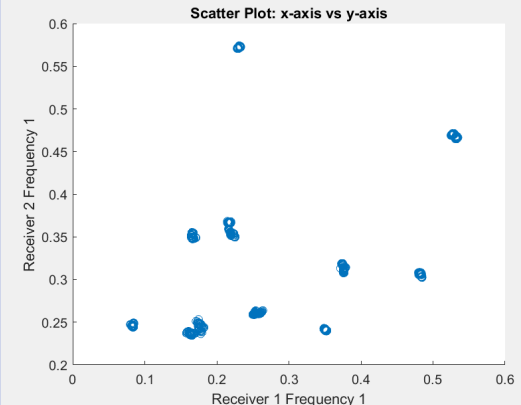
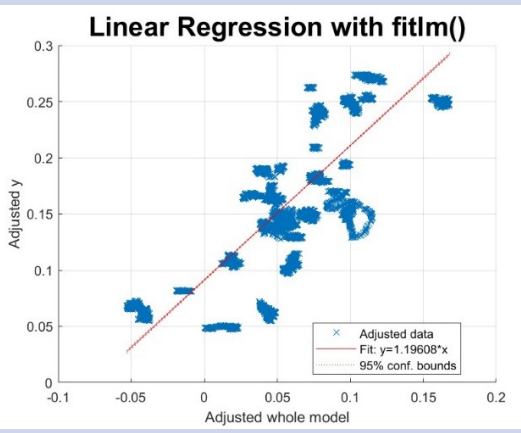


# Prediction of Wideband Channel in Semi-Static Environment Using Linear Regression in Machine Learning

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| Concepts and Relevance   | The Attempt of This Work   | The Attempt of This Work   |
|--|--|--|
| <ul style="list-style-type: none"> <li>Wideband Orthogonal Frequency Division (OFDM) Multiplexing for Wireless Networks</li> <li>Channel Estimate Second receiver from the First using linear regression based Machine Learning Algorithm</li> <li>Fit Linear Regression</li> <li>Support Vector Machine</li> <li>Minimization of Mean-Squared Error (MMSE) Between Predictive &amp; Test</li> <li>Predict Linear Regression Model between 'Trained' versus 'Actual'</li> <li><b>Sponsored By: NSF RET Award #1953745</b></li> </ul> |  <p>Antenna set <math>\mathcal{M}_1</math> at frequency <math>f_1</math></p> <p>Channel Mapping in Space and Frequency</p> <p>Antenna set <math>\mathcal{M}_2</math> at frequency <math>f_2</math></p> <p>Antenna <math>m</math></p> <p>2nd path of the channel <math>h_{u,m}</math></p> <p>User <math>u</math> at position <math>x_u</math></p>  <p>Cross Validation (Sum of Squared Distances)</p> <p>Number of Clusters</p> <p>X 1 Y 10989</p> <p>X 31 Y 20.7674</p> |  <p>Scatter Plot: x-axis vs y-axis</p> <p>Receiver 2 Frequency 1</p> <p>Receiver 1 Frequency 1</p>  <p>Linear Regression with fitlm()</p> <p>Adjusted y</p> <p>Adjusted whole model</p> <p>Adjusted data</p> <p>Fit: <math>y = 1.19608 * x</math></p> <p>95% conf. bounds</p> |

