# Semester 2 P4P Meeting Notes

When: Tuesdays 1pm - 2pm

Attendees: [klek990@aucklanduni.ac.nz](mailto:klek990@aucklanduni.ac.nz), [Shreya Singaraju](mailto:ssin733@aucklanduni.ac.nz), [Kevin I-Kai Wang](mailto:kevin.wang@auckland.ac.nz)

## 09/08/2022

**Agenda:**

* Introduction to project
* Project timeline
* Meeting schedule
* Discuss initial steps

**Minutes:**

* Merging points is not a problem but is it necessary?
* We should use the number of frames, not the number of points because points are not systematic. The points generated can change time wise. E.g. when the sensor is stationary, there are no points generated. Each time the update function is run, that is 1 frame. We can then merge these frames together.
* Need to convert matlab SLAM to python
* Check ICP. This algorithm measures the displacement between two frames in terms of orientation, distance, etc.
* For the final bit, we should have a map. Even having a straight line of points is fine. The data is sparse so it’s not easy to work with.
* .txt or .csv are not relevant because they both are basically the same thing. We just need the x, y, and z coordinates.
* Try print the array values as txt for the missing values for x, y, z.

**Action Points:**

* Use the matlab algorithm and collect basic data **frame by frame.**
* Try offline methods. Collect data of a non-environment path and test this in matlab with a .txt file using sensor data.
* Try using the ICP algorithm when we get it with the data.

## 16/08/2022

* Algorithm: Convert from point cloud to pose
* Transition matrix
* How to find distance

## 23/08/2022

* First step: Repeat straight line step
  + Repeat 3 times for straight line and run them all through the algorithm
  + Find a different location for a different straight line - much longer
* Measure the corridors and all locations to verify if the data is matching up with distance
* Fundamental configuration of mmWave radar (play around with parameters e.g. field of view etc.)
* Study algorithm for how it handles orientation/turns
* L shape could be two overlapping straight lines?
* Kevin to send Master's student mapping documentation
* Friday 2nd Sept meeting 1 - 2pm

## 13/09/2022

* Systematic approach when getting data/running algorithm
* Check how displacement and orientation accumulates and computes with point cloud algorithm. Need to look into it further.
* Tabulate data, controlled variables and result.
* (Objective function) How will we evaluate the performance of that trace (Check LShape with beginning point, turning point, and end point). Compare both results.
* This objective function will be used for performance measurement of the algorithm
* Things we are missing
* Fundamental idea and how it works (i.e. maybe modify to remember orientation of last accumulation)
* Try to get the UShape working.
* Display day, we can demo the output result of the ICP and our algorithm (if it's working as expected)
* Ideally get it done by the end of next week