Tools: Thoughts, Pseudo-code, and Planning

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Tools to Develop

1. Given input an volume, output filename (and possibly some magnitude), apply NRR warps to the volume and save it.

2. Given a volume and two warp lists, resolve the trajectories of the two warp lists and get the mapping of volume points for both. Usually, one of the two warp lists will be the correct one. The tool should calculate, using a measure like SSD, a measure of discrepancy (or difference between one warp and another).

Output Images

This is essentially a perturbation function with some I/O. Here are the steps expressed as pseudo-code:

- Open file and allow for different formats to be fed in. (The registration tools already include the code which is necessary)

- Apply some warps at random, maybe be generating a random warp list.

- Save the data and the warp list to file.

Alternative Idea

To perturb data, can re-use existing tools as follows:

- Input:

    - Take input data.
    - Take second input data at random.

- Processing:

    - Set the second data to become a reference.
    - Register the first data to the second.

- Output

    - Save the warped data
    - Save the inverse of the warp list.

We now have what we need. To control the magnitude of perturbation, you can:

- 'Fool' the optimiser by altering the objective function value.

- Register the data for a longer time.