What Calls What

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Contents

Introduction

Code-calling structure. Once written out, I realized that I have repeated a few steps. As of September 25, 2013, the code works, but perhaps removing the second call to idfids and organizing cyoalimbstrips will make the code a bit faster.

1 Code Tree

The main program called is alpha, so I won't include that here. I will only be listing user defined functions because listing all the IDL functions would be silly.

1. **defparams** - Defines system parameters from an input parameter .txt file
2. **defsysvarthresh** - Defines solar thresholds
2.1. **idsuns** - Defines which pixels correspond to which solar regions, does not use threshold values
2.2. **setbetterpeak** - Finds peaks in 2nd derivative of sorted 2d image to get thresholds
3. **everysun** - Using thresholds, finds centers of every sun-shaped entity, regardless of if it is a partial or too close to the edge
3.1. **idsuns** - In this scenario, needed to figure out how many suns to center (since the only input is the starting image)
4. **picksun_rot** - Makes sure the centers found aren't too close to the edges or the bottom two corners
5. **centroidwholesuns** - A secondary "wrapping" program that organizes three important functions in one area; more of an organizational program
5.1. **para_fid** - Finds all fiducials for a sun and then uses a parabolic fit to get a better position
5.2. **npixfit** - Uses a linear fit to find where the fitted solar limb crosses a threshold. A chord is drawn in a row/column of sun data that is bounded by two limb-fitted crossing points of the threshold. The center is calculated from an average of chord midpoints.
5.2.1. **cyoalimbstrips** - Feeds clean limb structure information into npixfit. Technically we have already found limb data so we can probably take this part out.
5.2.1.1. **makestrips** - Makes strips of solar data from a cropped image of a sun. The strips extend the entire length/width of the cropped image. There strips of solar data are centered around the masked center of the sun.
5.2.1.1.1. **micro_makelimbstrips** - Calculates limb positions based on threshold crossing points
5.2.1.1.2. **copy_limb_struct** - copies limb structure information into a larger structure
5.3. **best4** - Takes the list of fiducials and narrows them down to the 4 closest to disk-center
6. **idfids** - Identifies the best 4 fiducials according to a catalog of distances between fiducials