Increasing Astronomical Photographic Resolution by Convolution Matrices GERARD NICKEL, University of Dallas — In digital astronomical image processing, distortion limits the quality of photometric data. Often, this precludes accurate and precise analysis of stars or planetary features imaged close to one another. This is a problem in particular for period analysis of binary stars and searching for planetary transits, due to the merging of nearby stars into the area of interest. I proposed a method which utilizes a pair of filters and pixel math to increase resolution, thereby improving astronomical image features and enabling more precise analysis thereof. Comparison of processed and unprocessed data was done by comparing signal to noise ratio and brightness profiles of each. All calculations were performed and results analyzed using Astronomical Image Processing for Windows (AIP4WIN) by Richard Berry. In many cases, previously unusable star profiles were resolved sufficiently to take photometric data from them, while those with low signal to noise ratios improved by a factor of two to three. These results suggest that the proposed method could be used to enable photometric analysis of previously un-usable data.