Speckle Imaging of Degenerate Fermi Gases\footnote{We acknowledge NSF, DARPA ARO OLE, and AFOSR MURI} EDWARD SU, MIT, WUJIE HUANG, CHRISTIAN SANNER, AVIV KESHET, JONATHON GILLEN, WOLFGANG KETTERLE — We develop a technique for measuring the fluctuations in the total and relative density of two-component gases, based on the dispersive imaging of speckle patterns. The compressibility and susceptibility can be extracted from the measured fluctuations. Using this technique, we study the pair correlations of strongly interacting Fermi gases, both in the BEC-BCS crossover and in the case of strong repulsive interactions.