Classification of Global Microglia Proliferation Based on Deep Learning with Local Images by Hunter Morera For the Ph.D. degree in Computer Science and Engineering Microglial cell proliferation in neural tissue occurs during infections, neurological disease, neurotoxicity, and other conditions. In basic science and clinical studies, quantification of microglial proliferation requires extensive manual counting (cell clicking) by trained experts (2 hours per case). Previous efforts to automate this process have focused on stereology-based