As the underlying cause of Glioblastoma Multiforme (GBM) is presently unclear; currently, GBM can only be detected through a combination of MRI and CT brain scans, with the addition of a resection biopsy. Since astrocytoma only becomes evident at critical mass, when the cellular structure of the neoplasm becomes visible within the image, along with the evidence of neurological symptoms, this paper seeks to evaluate the plausibility in achieving earlier detection of the malignant area via a volumetric voxel approach to removing noise particulates and analyzing voxel differentials. Therefore, in order to investigate neoplasm continuity, a multi-polynomial/multi-domain regression algorithm is implemented, thus providing a graphical and mathematical analysis of the differentials within critical mass and non-critical mass images, having been preprocessed with the above requisite. Given these augmentations to MRI and CT image rectifications, it is highly probable that an increase in astrocytoma detection could be achieved, along with greater accuracy in diagnostic evaluations of the malignant area.

Major: Modeling and Simulation

Educational Career:
Bachelor’s of System Science/Scientific (Systems Engineering), BS, 1989, University of West Florida

Committee in Charge:
Charlie Hughes, Chair, Computer Science
Patricia Brockelman-Morrow, Modeling and Simulation
Ulas Bacgi, Computer Science
Curtis Lisle, Modeling and Simulation

Approved for distribution by Charlie Hughes, Committee Chair, on October 10, 2018.

The public is welcome to attend.