A nondestructive inspection of a Mangosteen, Fruit, inside is an essential way for a fruit grading. In this paper, we proposed a nondestructive 2D cross-sectional visualization of Mangosteen using infrared and a method for grading a Mangosteen. The infrared was selected because there is no effect against taste and consumer health. By experiments, the infrared in the frequency range of 850 and 1,250 nm are found to be appropriate for radiating through the Mangosteen. To obtain a 2D cross-sectional image of the Mangosteen, a series of passing-through infrared ray was collected. The collection of profiles, a series of the infrared without a rotation along a cross-sectional axis, around the Mangosteen is used to reconstructed an image. There are series of 56 infrared for each profile and totally 19 profiles for each Mangosteen. The 2D cross-sectional image of Mangosteen can be reconstructed by filtered-backprojection (FBP) algorithm. A Mangosteen can be graded by classification the magnitude of its responses.

From experiments using a prototype that we developed, the result was shown that we can inspect the Mangosteen by 2D cross-sectional visualization of the Mangosteen via the nondestructive method. It shows 70% of the classification rate of Mangosteen hardness when used a method that we proposed. This method can be graded the condition of Mangosteen flesh to 4 types that are normalcy, dryness, translucence and unknown.