Problem Statement:
The paper aims at solving a key problem, rendering participating media into the scene. It proposes a new sampling method for volume rendering and approximates the calculation of volume illumination. This method makes use of samples in an efficient way and reduces noise.

Challenges in solving the problem:
Current methods of approximation cause singularities to appear in the image
Lot of samples are required for a good image
Rendering the image takes a lot of time

Key Ideas:
Equi-angular sampling of light sources.
De-coupled ray marching

Result Summary:
Render Cornell's box with participating media.

Implementation Approach:
Equi-angular sampling:
Currently for point light we are calculating the projection of the light on the ray to find the distance delta from integration bound a. The projected point also helps in calculating the distance D of the light source from the ray. With these distances known we calculate the angles subtended at both ends a,b by the point light. Thus we can now calculate the cdf. We invert the cdf and use zeta to draw from a uniform distribution to get a sample point according to the equiangular sampling.
Volumetric sampling is done by approximating the integration to sum of illuminations calculated at sample points taken along the ray. Total illumination at any point on image plane is sum of volumetric illumination calculated in the above method and the surface illumination. For heterogeneous media, we divide the media into segments and transmittance is calculated for each segment. Illumination at any point is calculated same way as in homogeneous media except, for calculating illumination at a sample point, we consider transmittance of the segment that belongs to where as transmittance in homogeneous medium is same all through.